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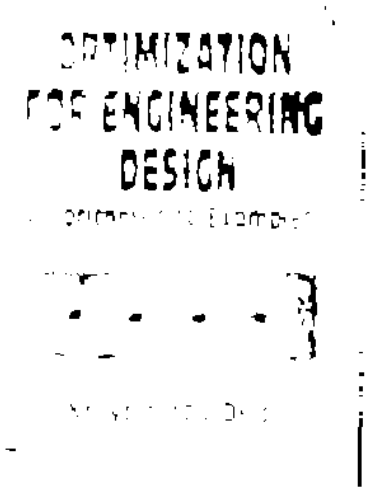

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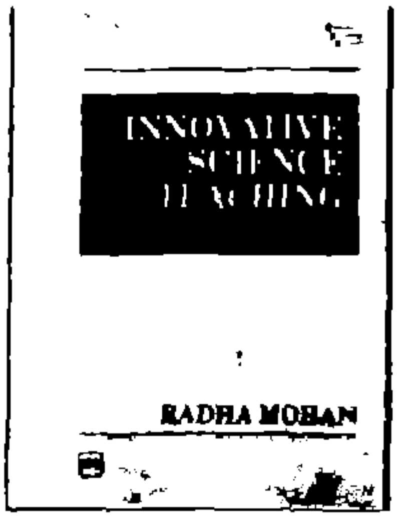

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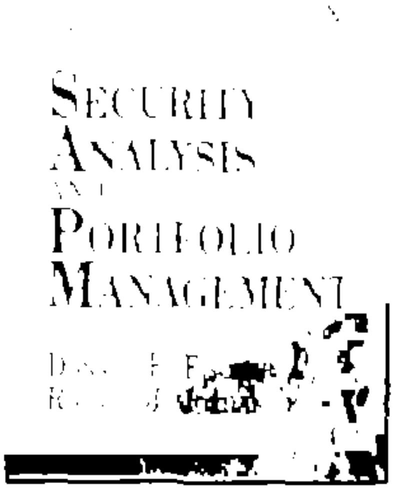

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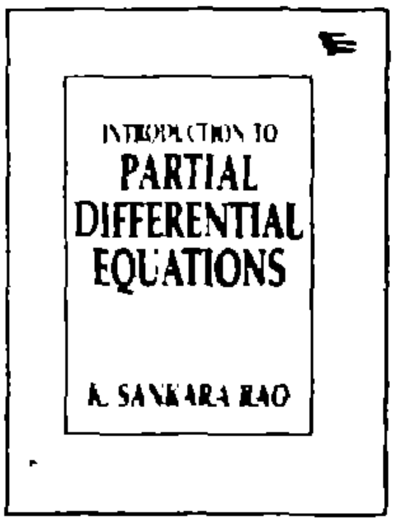

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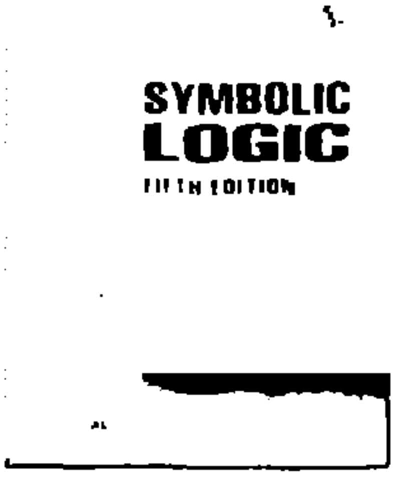

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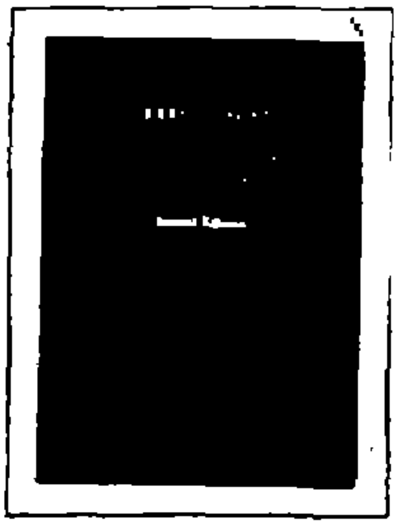

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Editor :
SUTINDER SINGH

Educational Administration and Human Relationship

Umrao Singh Chaudhari*

Educational administration is the process and agency of integrating the efforts of personnel, and of utilizing appropriate material and ideas in such a way as to promote effectively the development of human quality. The new concept of administration puts less emphasis on the administrator having specialized competence in all aspects of educational activity, and more stress on his possession of broad general professional competence coupled with highly developed skills in the areas of human relations and administrative processes. Administration must necessarily take place in an interpersonal setting. The crucial factor in administration therefore, is the nature of the human relationship involved. The administrators' basic functions are to exercise broad judgment, provide professional leadership and exhibit discriminating insight and understanding in the utilization of personnel. It is perhaps because of the perennial concern for promoting human element that the *Education Commission* (1964-66) advocated educational administration to be a "matter of faith and vision, bold and courageous leadership, and proper handling of human relationship". Thus, co-operative rather than manipulative approach has to be employed in eliciting the contribution of personnel to realize the organizational goals.

In education, administration would continue to be a service agency to teaching, research and extension work. One cannot be a good educational administrator unless one is a good teacher. Hence there should always be an opportunity open for an educational administrator to come back to teaching or research and for a teacher to go over to the administrative side on a tenure assignment. Educational administration and teaching must draw inspiration, support and enrichment from each other through periodic exchange of roles. Studies on "effective schools" have also reinforced the belief that an educational administrator must be a strong instructional leader. He should promote orderly climate in the school, set high expectations for the students, put emphasis on basic skills and regularly monitor instructional progress of the learners.

In their now famous work *The Art of Japanese Management*, Pascale and Athos, while discussing the seven "Ss" of management have drawn the conclusion that the western emphasis on the first three "Ss" (Strategy, Structure and Systems) has produced an arid world in which nothing is alive. "An organization is often given its life", they say, through the four soft "Ss", that is, Staff, Skill, Style and Super-ordinate goals". The astounding success of many Japanese companies comes through meticulous attention to the soft "Ss", which act as a lubricant in the organization machine to keep the hard "Ss" from grinding one another away. To utilize and mobilize human energy and creativity through harmonious human relationships, educational administrators must orient themselves to the demands of the four soft "Ss".

Today competition poses an organizational challenge that cannot be met simply by technology or financial resources. Technological innova-

(Contd. on page 6)

**Former Vice Chancellor, Devi Ahilya University, Indore.*

UGC, University and Affiliated College

Need to Redefine Links

M.R. Kurup*

Higher education in India is included in the concurrent list, indicating that both the union and state governments jointly will promote, monitor and regulate the sector. For this purpose, and as an offshoot of the Radhakrishnan Committee report, the University Grants Commission came into existence. Among the powers and functions of the UGC, as enumerated in the Act of 1956, the following stand out:

(a) inquire into the financial needs of the universities,

(b) allocate and disburse grants to the universities,

(c) establish and maintain common services and facilities,

(d) recommend measures necessary for the improvement of university education,

(e) advise on the allocation of grants, establishment of new universities,

(f) frame regulations on qualifications of teaching staff,

(g) define minimum standard of instruction for grant of degree, etc.

It is apparent that the UGC is empowered with the duty of superintendence over general higher education is the country.

With a few exceptions, the universities in the country follow the affiliated system of collegiate education. The UGC, which is an apex body, prescribes guidelines and conditions of affiliation from time to time. The minimum standard of instruction, stipulated by the UGC, vide Circular No. F1-117/83 (CP) dated 25-11-1985, for grant of First Degree, is listed below:

(a) Admission should be given to students who have completed 12 years of schooling.

(b) Admission should be given on merit, after taking into account the orders regarding reservation, etc.

(c) Student enrolment shall be in accordance with the number of teachers and physical facilities available.

(d) Every university enrolling students for the first degree shall ensure that the number of actual teaching days does not go below 180 days in an academic year.

(e) The university shall adopt the guidelines issued by the UGC from time to time in regard to the conduct of examinations.

(f) No teacher shall be appointed who does not fulfil the minimum qualifications as prescribed for such recruitment.

(g) Every university shall lay down norms in respect of physical facilities, which the college should satisfy, and that the lecture classes shall normally not exceed 80 students, unless, in special cases, the college has accommodation for larger classes and makes suitable audio visual arrangements for effective lecturing, accompanied by tutorial classes.

A college, which undertakes to fulfil the conditions, as may be laid down by the University and UGC, is given temporary affiliation in the initial stages, and subsequently conferred permanent affiliation on actual fulfilment of all conditions.

New Colleges

An aspect that needs to be viewed with concern is the process of granting permission to start new colleges. The new Maharashtra Universities Act 1994, as well as the erstwhile Act of 1974, stipulated the need for drawing a Perspective Location Plan, taking into account the varied and potential needs of different subregions that constitute the jurisdiction of a university. Neither in the past, nor at present, has any scientific plan been formulated with experts drawn from different fields such as education, economics of education, demography, geography, town planning and area development, housing, to mention a few. Often permission is granted without examining the educational viability of project or the financial capability and the objectives of the applicant intending to start a college.

Secretary-General, Akhil Maharashtra Federation of Associations of Non-Government Colleges, C/o Kelkar-Vaze College, Mulund, Bombay-400 081.

Institutions have come up in large numbers which are inherently incapable of fulfilling the norms as laid down by the UGC or the University. They remain almost perpetually nonviable and 'sick', affiliated on a temporary, year to year, basis, and carry on 'statistically' for decades, dishing out substandard education.

A glance through reports of local inquiry committees on affiliation, would make it clear that most of the newly established colleges do not possess required classrooms, library and laboratory facilities, utilities for students and staff, qualified and regular teaching and nonteaching staff, or even a full time regular principal. Many of them come up as social or political constituencies, business propositions or under the pretext of serving certain specific interests. While the Management of such institutions would be very keen to ensure constitutional guarantees and rights, they are often found wanting when it comes to fulfilment of conditions of affiliation.

The University remains a silent and often helpless spectator, unable to take any action, including disaffiliation, for one reason or the other. The excessive demand for seats in colleges, over the limited supply, seems to embolden the Management to manipulate the University. Even a poor college is in the "sellers' market" in urban areas. The government too gets directly involved with the process of admission, so as to ensure admission to every one who seeks. The poor colleges, which are the last priority of students for admission in the normal course, oblige the government and remain in its good books.

For a variety of purposes, including national and international recognition, it is desirable for a college to be admitted to the UGC's fold of national network. This is known as listing under section 2(f) of the UGC Act, 1956. The following conditions may have to be fulfilled to enable a college to be so listed:

(a) When applying for listing, the college should have affiliation for the current year.

(b) It provides instructions up to Bachelor's Degree, and

(c) It is managed by a registered Society or Public Trust.

With effect from 1-7-1974, the UGC expects the college to submit the following documents for securing listing under 2(f) :

(i) Document showing the date of establishment of the College,

(ii) A photostat copy of the notification regarding the latest affiliation given to the college,

(iii) The particulars of the college in the prescribed proforma, duly signed by the Principal and countersigned by the University Registrar (with official seal),

(iv) An attested copy of the Memorandum of Association/Trust Deed in English/Hindi,

(v) An attested copy of the Certificate of Registration of the Society/Trust,

(vi) An Indemnity Bond executed on the specimen prescribed by the Commission, by the Society/Trust, managing the college;

(vii) A certificate to the effect that the value of stamps used in executing the Indemnity Bond is correct and is as ascertained from the Collector of Stamps of the State, and

(viii) Resolution of the Governing Body/Board of Trustees, authorizing the person concerned to sign the Bond.

Once the documents mentioned above, forwarded through the University, are accepted by the UGC, the college will be formally listed. Such a list will be circulated among the government departments and agencies to ensure disposal of research, travel, fellowship or freeship proposals submitted by colleges under various schemes.

Grants from UGC

Institutions such as Central, State and Deemed Universities and Colleges (except Agricultural, Medical, Engineering and Veterinary colleges), are eligible for receiving financial assistance from or through UGC. For this purpose, the institution has to be recognized under section 12B of the UGC Act. In 1972, the UGC Act was amended with a view to regulating the unplanned proliferation of Universities and colleges, by adding Section 12B, which states asunder:

> "no grant shall be given by the Central Government, the Commission or any other organization receiving funds from Central Government, to a university or college which is established after the commencement of the UGC (Amendment) Act 1972, unless the Commission has, after satisfying itself as to such matters as may be prescribed, declared such university/college to be fit for receiving such grant".

For recognition under section 12B, it is essential that the college be permanently affiliated to a university. Permanent affiliation is granted only when a college fulfils all norms as might have been laid down by the university for that purpose.

Section 45 of the Bombay University Act 1974, now replaced by Section 88 of the Maharashtra Universities Act, 1994, stipulates that a college fulfilling all conditions of affiliation may be granted permanent affiliation, provided it has a standing of 6 years. This has now been scaled down to "three years of standing" by the UGC vide communication No. 1-18(79) (CPP) Vol. IV dated 9-12-1987, which states that:

> "After the college has functioned for three years in accordance with the conditions and norms as laid down, inspection committee be sent by the university to check whether all conditions and assurances have been fulfilled or not. The reports of such inspection committee should be placed before the College Development Council and the Academic Council of the university for purpose of giving permanent affiliation, if the college has fulfilled the prescribed conditions".

Though the UGC has reduced the cut off period for permanent affiliation to three years of standing, no university in Maharashtra has implemented the recommendation for fear, among others, of manipulation by interest groups to force nonviable and unhealthy colleges to be brought under permanent affiliation so as to avoid periodic review by local inquiry committees.

A simple exercise of classification of colleges affiliated to the University of Bombay, based on the quality of Final Year results of examinations conducted by the University, has revealed a highly skewed institutional distribution. Performance of just about 10 per cent colleges is 'consistently excellent', whereas about 30 per cent report 'good to average', and the remaining 60 per cent belong to 'below-the-average' category. In terms of sheer numbers, the tail is too long, and under the 'simple majority' system of decision making, the representatives from the largest group would tend to dominate university bodies. Any innovative academic scheme, initiative to upgrade the syllabi to international standard, or introduction of continuous evaluation as an alternative to year-end examination, would be suspected to be emanating from the so called 'elite' colleges. These proposals may not be acceptable to the 'majority'. The Bombay University's efforts to decentralize and transfer the First and Second Year examinations to colleges had to be partially withdrawn due to the weight of the large numbers, despite protest from reputed colleges.

Similarly, elections to Board of Studies, for instance, without any precondition of academic output, such as recent research work, publications in reputed journals, presentations at regional or national level seminars, etc. have replaced quality by quantity. The 10 years of teaching experience as an eligibility condition for becoming a member of the Board of Studies, is a mere quantitative expression, which is a matter of time, and may not reflect quality of one's teaching and research. With a few honourable exceptions notwithstanding, the standard of deliberations in these bodies, as a consequence, may not reflect the contemporary development in the subject at international level. Such university bodies would not be able to insist on implementation of all UGC norms with regard to affiliation and standard of education. Relaxation of norms becomes the rule rather an exception. It will not be even remotely embarrassing for the college authorities, for instance, to seek approval of appointment of a teacher with postgraduate degree in Commerce to teach "Business Communication", which calls forth a teacher with a postgraduate degree in English language, under the pretext of nonavailability of suitable candidates despite advertisements.

The faculty and infrastructure scenario in colleges, particularly during the initial period when the college is not under 100 per cent government grant-in-aid scheme, is depressing, to say the least. By continuing with 6 years of standing, the university hopes to bring about — through internal and external pressure — some improvement in the standard of education in such institutions. As a result, the real cost of education is borne largely by good colleges, as they too are deprived of financial and academic benefits emanating from UGC recognition, despite fulfilling essential conditions of affiliation, including three years' of standing. The university may have to take a positive stand on this issue, to motivate good institutions to attain excellence. However, in states like Tamil Nadu, colleges are considered for permanent affiliation as per the new guidelines of the UGC, which enables them to receive UGC grants at least three to five years ahead of colleges affiliated to universities in Maharashtra.

When majority of the colleges remain outside the 2(f) and 12B of the UGC Act for years, the UGC would feel relaxed as such colleges would not claim a share from its limited resources. The difference between inclusion and noninclusion under 2(f) and 12B could be understood by looking at a college which has just been declared fit to receive grant by the UGC. The Pendarkar College, affiliated to the University of Bombay since 1979, had to wait for nearly 15 years to be listed under section 2(f) and 12(B). No sooner had the college been listed, it is sanctioned Rs. 15 lakh under the First Degree Vocationalization scheme. This would go a long way to improve infrastructure, and benefit faculty and students in a number of ways. More than 50 per cent of the Arts, Science or Commerce colleges affiliated to the universities in Maharashtra, are yet to be brought under 2(f) and 12B, even today.

The affiliating university cannot escape the blame of keeping majority of its colleges from permanent affiliation and the UGC's financial network. *Just as there is a minimum time limit prescribed by the UGC for bringing the college under permanent affiliation, there should also be a maximum time limit that the university may have to stipulate beyond which, the college cannot remain outside 2(f) and 12B.*

Board of University & College Development

During the late 1970s, the UGC had conceived a College Development Council to be set up with every University, to dovetail the growth of colleges and to enable them to come under the UGC umbrella. It was aborted in many universities, the moment the financial responsibility was shifted from the UGC to the state government. However, the Maharashtra Universities Act 1994, has recreated it in the form of Board of University and College Development (BUCD), aimed at positive intervention to promote excellence in higher education. The object seems to have been lost sight of, since the Board is invariably used to accommodate "loyalists" in universities. The Director of BUCD ought to have been a person without any bureaucratic mindset, but with imagination, initiative, understanding, and missionary zeal, to cause qualitative changes in the physical and human overheads in colleges. Most universities have not taken into account the catalytic role expected of the BUCD. More than as a regulatory and administrative body, BUCD should give priority to promotional role to bring about improvements in the standard of education in university departments and colleges.

Broadly, the UGC provides development grant under five year plans schemes outside plan allocation, and unassigned grant. Getting the grant, however, has become a herculean task. The process of listing the colleges under 12B needs to be streamlined and shortened. There is lack of coordinated information available with the university and colleges, and it is hoped that the situation will improve with the setting up of BUCD and the UGC's Regional Offices. Hardly any one in the University of Bombay was able to properly and adequately guide the colleges about the procedure to get UGC grant, after the retirement of the first Director of the College Development Council in 1985. As a result every proposal sent to the UGC through the University for listing under 2(f) and 12B, was returned at least once for one deficiency or another. There is lack of follow-up at the university level and equally alarming nonresponse from the UGC. The UGC also added to the confusion by diverting funds from the college sector to central universities, or from one use to another, under one pretext or another. This is borne out from the plight of colleges which were granted 8th Plan development assistance, but have not yet received the major chunk. Even the fate of the new proposals sanctioned by the UGC team in April 1995, is not yet known.

The colleges receive a wide range of communications from the UGC through the university, pertaining to international conferences, fellowships, freeships, travel grants, to mention a few. Almost every one of these communications is received either after the due date is over, or just about the due date, leaving very little time for the interested teachers or institutions to prepare and respond. Since it is mere diffusion of information, there is no need for the UGC to route them through the university. A direct communication will save time, and enable maximum participation in national and international scholastic programmes.

There is also a need for greater transparency and simplification of procedures. Officials, including the Principal, of newly listed colleges are not familiar with the procedures and practices followed by the UGC, nor is properly structured and systematized information available regarding UGC grant and the preparation for and followup of grant. There is equally a dearth of information regarding the standard of audit of accounts, utilization certification, etc. Every one is groping in the dark, with the exception of some well established colleges. Consequently, most of the colleges are forced to adopt a trial and error method, which is time consuming and often too expensive. One hopes the BUCD and the Regional Centres of the UGC, will organize a workshop for College Principals, Registrar-Accountants on different aspects of relationship between colleges and the UGC. If the Academic Staff College in the university is not in a position to coordinate such a workshop, the Associations of Principals may have to take the initiative.

Looking at the emerging trend of control exerted by the state governments, the importance of UGC as a regulatory and promotional body appears to be declining. All matters — academic and financial — are ultimately decided by the state government. Even the university has lost its academic autonomy, for every decision is now interpreted in terms of financial burden on the state. The double standard of the state government in Maharashtra is most vividly brought out by relaxing the UGC's guidelines of 80 students per class by forcing the colleges to take 120 or more students per class, with a view to save government expenditure. At the same time the government is scrupulously insisting on a reported recommendation of UGC's Punnaiya Committee, which seems to have recommended a minimum of 24 and 16 students respectively for a Paper/Subject at the undergraduate and postgraduate entry point, against 15 and 10 students accepted by the universities and the government in the past. The university is helpless despite even judicial pronouncement in its favour regarding academic supremacy. Without university autonomy, the process of restructuring of the syllabi to make it relevant and at least partially skill forming, would be reduced to nought by the state government's economy drive. It is, therefore, time to redefine the scope, responsibilities and the limit of UGC, university and the state government, in the field of collegiate education.

Educational Administration and Human Relationship

(Contd. from page 1)

tions and resource allocation are outcomes of human processes. Therefore, our ability to compete rests on our ability to organize human beings in such a way as to generate opportunity and results rather than impasses, stagnation, bureaucracy and wasteful friction. Interpersonal relations and dialogue, therefore, have to be recognized as the basic ingredients of educational administration to enable people to come together, to keep together and to work together.

In an educational organization highly educated people work and interact. The more educated a population, the more democracy and openness it seems to demand. A more educated group cannot be managed in the traditional authoritarian "don't ask me a question" fashion. In fact, asking questions and challenging assumptions are becoming part of everybody's job. Novelty and originality will not emerge in an organization unless such protestant attitude prevails there. "The more the society advances towards a super-symbolic economy", observes Alvin Toffler, "the more important it becomes to permit an extremely wide range of dissent and free expression. The more any government chokes off or chills this rich, free flow of data, information, and knowledge — including wild ideas, innovation, and even political dissent — the more it slows down the advance of the new economy."

Educational institutions are not surrogate machines like the "robots" which do not rebel. They are the abodes of culture where spirit of inquiry, questioning and disagreement are deliberately fostered. Here the people should disagree without being disagreeable, and value substantive conflict by keeping personal conflict to a minimum. To usher in such a permissive intellectual climate an educational administrator is expected to possess democratic attitude, scientific temper and philosophic tolerance. Administrators having such a mind-set and temperament can make an educational institution a true "academic republic".

The human beings are ordained with two opposing propensities: the urge to create and the urge to destroy. They also exhibit the tendency to shirk and dodge as well as the capacity to work hard and excel. Human beings do not like to stay simply as creatures of God. They frequently strive to be creators. But, when the urge to create and excel is thwarted, urge to destroy comes into play. Hence it is the major responsibility of the educational administrators to create such conditions and contexts, in the educational institutions, which stimulate and inspire the teachers to perform qualitatively better and higher. They would make attempts to develop in the teachers and educational workers a "life style" which in the words of A.N. Whitehead "hates waste, economises material and prefers good work".

The 21st century, unlike any other period in our history, will offer major challenges to our human resources capacities as we enter a period of rapid social, technological and economic change. We can expect such fluctuations and upheavals to progress at an even more accelerated rate in the next century. Keeping up with societal changes will consume much energy and require unusual resourcefulness on the part of the educational leaders. Preparedness and renewal is the price the educational administrators are required to pay to keep the organizations and institutions dynamic, versatile and vibrant for their soft landing in the future.

Information Processing Approach to Teaching-Learning

B. Saminathan*
R. Balasubramanian*
C. Rajeswari*
S. Mohan**

Current Trends

Psychologists and neurologists have recorded peoples' behaviour. They envisage a new era in mind research dominated by machines which use radio-active tracers, magnetic resonance effects.

There is a talk of reaching inside brains to "film" the trails of mental activity blazed by flitting thoughts and feelings, that is, every mental event leaves a noisy trail. Not only are electrical and magnetic fields generated by the firing of wave networks, but every wave of firing is accompanied by tell tale surges in glucose consumption, neuro-transmitter activity and local blood flow.

Imaging systems can track these microscopic fluctuations in several ways. The best known method is positron-emission tomography (PET). A PET scanner has to sift through 7 or 8 million gramma-ray signals every second to locate concentrations of the tracer. PET images could give a broad-brush picture of which regions of the brain "lit up" while speaking or moving a hand, but that was about all.

PET studies have shown that the post parietal cortex of the brain, seems to be crucial in bringing about shifts in our focus of awareness. Following the speculation of Nobel prize winner, Francis Crick, and others, some imaging researchers are hoping to test the theory that consciousness depends upon synchronized firing by neurons throughout the brain.

Conceptualization of Information Processing

Sophisticated PET scans can record the actual firing of the neurons that hold the pictures of our lives, and observe memory move like a current across the brain while it sleeps or wakes.

How and where the brain lays down and consolidates memory — that makes it permanent — is yielding to understanding. According to the researches, we are experiencing "an explosion of knowledge about what parts of the brain are doing that".

Memory is not a single entity residing in a single place. It is likely that the pathway of neurons and connections an experience forges in the brain can be reactivated again. It involves multiple systems in the brain. The emotion associated with a memory for example is stored in a different place than the content of the memory itself (*Jill Meimark,* 1995). Memory it turns out, is both far more complex and more primitive than we know. Ancient parts of the brain can record memory before it even reaches our senses — our sight and hearing, for instance. At the same time "there are between 200 and 400 billion neurons in the brain and each neuron has about 10,000 connections". Notes psychiatrist, Daniel Siegal, "The parallel processing involved in memory is so complex we can't even begin to think how it works."

"The hippocampus is critical for learning", say Gluck, "and it is also one of the most volatile, unstable parts of the brain — one of the first parts damaged if oxygen is cut off. It has to immediately capture a whole range of information about an event and needs the ability to go rapidly through many changes. We think the hippocampus serves as a filter, learning new associations and deciding what is important and what to ignore or compress. That is why it is critical for learning. The hippocampus is in a sense, a collating machine, sorting and then sending various packets of information to other parts of the brain (*Jill Meimark,* 1995).

Bio-Informatics

When an image is received by the brain, how is it passed on to the cognition areas? We know that a scene registered on the retina in the eye is projected on a section of the brain cortex by the optic nerve — a compact bundle of a million or so nerve fibers. From the visual projective cortex, information about the things

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**Research Scholars, **Prof. & Head, Department of Education, Alagappa University, Karaikudi.*

seen is somehow transferred to billions of other cells in the brain. Can we imagine that the million points of projection are connected with all those billions of cells? It is quite inconceivable that anything like the necessary number of physical links could be housed in the head. We are therefore led to the suggestion, derived from the examples of Radar and Television, that communication between the projection and the cognition area must be by a scanning mechanism.

Moments after being removed from the skull, the brain begins to collapse into a jelly like mass. And yet this wet aspic of tissue contains a fantastic archaeology of glands, organs and lobes, all of which have their own specialised jobs. Much of this archaeology is devoted to the complex of tasks of memory.

The transduction of physical stimuli, light, heat, pressure, odors etc, into neural signals is performed by a set of specialized cells known as receptors. Stimulation of the receptor produces a decrease in membrane polarization, called the generator or receptor potential.

In operation, receptor transfer characteristics contain static and time dependent terms. Some receptors have sharp thresholds, some respond only to stimulus changes in one direction, and some are primarily responsive to the rate of change in stimulus amplitude.

Information Processing System : A System Analysis

As conceived today, the human processing system consists of four major sites: a) Sensory system; b) Short-term memory; c) Long-term memory; and d) Response system. The system also involves functions and processes within each site and the interactions among these sites.

The person's encounter with the environment is mediated by a) The senses called "windows of the world", as input channels, and b) The muscle systems as output channels or "actors on the world".

The Sensory System

The sense organs, such as eyes, ears, taste buds, pressure and pain nerves in the skin, receive impressions from the environment. They serve as input channels which gather information from the environment.

Studies with the visual sensory register have also shown that it can hold at least 11 to 16 items of information during the second before it loses the information through decay (*Averbach & Sperling*, 1961; *Estes Taylor*, 1966). The sensory register holds information for such a brief time that some psychologists prefer to call "perception", it is a step that information passes through before it reaches short-term memory.

Short-term Memory

Those stimuli collected from the outside world are initially processed in what different theorists have labelled as short-term memory, primary memory, active memory or working memory. Most people consider those terms as being synonymous. The short-term memory holds a relatively small amount of information — about seven items or chunks — for a short time — 30 seconds or so. The type of information stored consists of sounds images, words or sentences, and information is lost from short-term memory by being displaced by new inputs. Information in short-term memory may be transferred to long-term memory through either maintenance or elaborative rehearsal.

Short-term memory, in addition to its transient quality, also has a very limited storage capacity. This capacity is estimated to be about 7 items, plus or minus 2 (*Miller*, 1956). The storage capacity of short-term memory can be increased, however, by a process known as chunking. As a world record, achieved only after prolonged practice, seems to be about 80 items, grouped it into a number of chunks [*Ericsson & Chase*, 1982].

Rehearsal

Some of the information in short-term memory is neither lost nor retrieved but passed along to the next memory stage — long-term memory — through rehearsal. The process of rehearsal consists of keeping items of information in the centre of attention, perhaps by repeating them silently or aloud.

The amount of rehearsal given to items is important in the transfer of information from short-term memory to long-term memory (*Rundus*, 1971). In the last few years, other experiments have indicated that the sheer amount of rehearsal may be less important than the ways in which the information is rehearsed. Just going over and over what is to be remembered [called maintenance rehearsal] does not necessarily succeed in transferring it to long-term memory [*Craik and Watkins*, 1973], what is known as elaborative rehearsal is more likely to succeed.

Elaborative rehearsal involves giving the material organization and meaning as it is being rehearsed: it is an active rehearsal process, not just the passive process of repetition. In elaborative rehearsal, people use strategies that give meaning and organization to the material so that it can be fitted with existing organized long-term memories. Elaborative rehearsal, although introduced here in the context of memory stages, is a part of an alternative conception of memory called the levels-of-processing theory: it also relates to the organization of memory and to what is called semantic memory.

Long-term Memory

We organize, categorize and classify information in a number of ways. Long-term memory is a bit like a library with a good cross-indexing system. Two different but related long-term memory stores are said to exist. One, called semantic memory, contains the meaning of words and concepts and the rules for using them in languages; it is a vast network of meaningfully organized items of information (*Quillian,* 1966). The other containing memories of specific things that have happened to a person (reminiscences) is called episodic memory (*Tulving,* 1972).

The levels of processing theory of memory emphasizes the depth of analysis and the elaboration of incoming information. The most superficial depth, or level, is that of perception; the next deeper level is the structural level; and the deepest level involves giving meaning to the input. Information reaching the meaning level and elaborated at this level has the best chance of being retained (*Crail & Ttulring* 1975). According to the levels of processing view, simply repeating the informati — maintanence rehearsal — is not enough for good memory. All this does is to maintain the information at a given level of depth, for deeper levels to be reached, the rehearsal must be elaborative. In other words, rehearsal must process the information to the meaning level if the information is to be well retained. Rehearsal is thus seen as a process which gives meaning to information. Elaboration refers to the processed information so that it can be tried to or integrated with existing memories. The greater the degree of elaboration given to an item of incoming information, the more likely it is that it will be remembered. The best memory is the result of processing to the meaning level, where the amount of elaboration is also the greatest.

Response System

The muscle systems constitute the last link of the information-processing chain. Each decision made in semantic short-term memory elicits from long-term memory coded directions for activating the appropriate behaviour output. The nerve system transmits these orders to the appropriate muscles which perform the desired behaviour.

Processes in Information Processing

In all cases of information processing the thinking processes of the students are the focus of attention.

The process of attention divides our field of experience into a focus and a margin. Events that we perceive clearly are at the focus of experience, other items are perceived dimly. We may be aware of their presence, but only vaguely so. These items are in the margin of attention.

Meaningfulness is one of the most over used words in Education. To make unfamiliar material meaningful for our students, we give them associations. The greater the number of associations the more meaningful the information. One type of association is familiarity, another is patterning — the ability to organize material in some logical way (one contains familiar English words that are patterned in a logical sentence. We should be able to learn easily.).

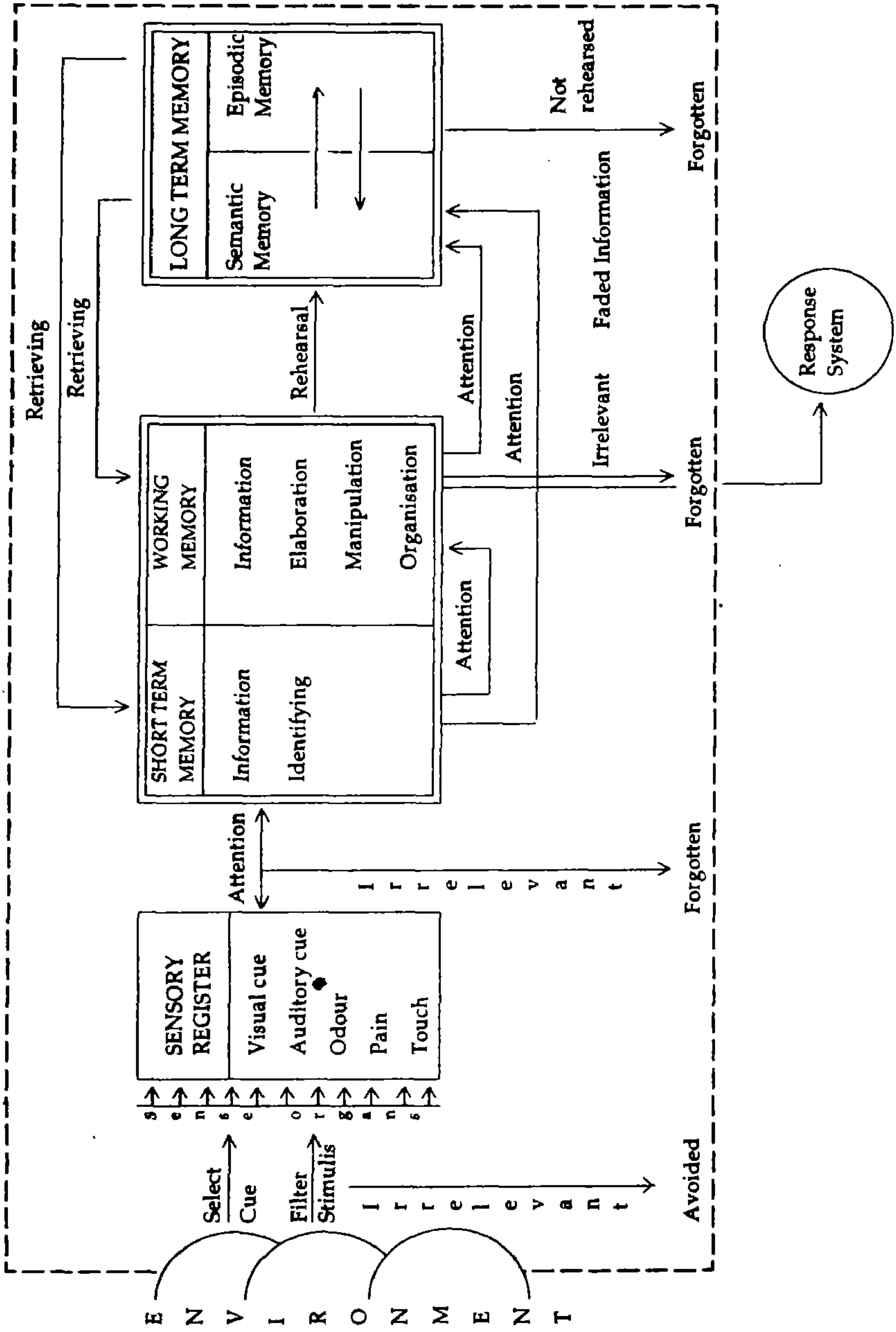
Mediation, the process of creating links between unrelated items. Teachers can help students by demonstrating mediational behaviour, that is, by providing specific examples of the technique.

Hierarchical structure is a sequence that orders material from simple learning events (specific ideas and concepts) to complex ones (abstract concepts and principles). Research on the effectiveness of sequencing is encouraging. As Bower has pointed out, the factor of organisation is extremely important in aiding retrieval from memory. What this implies is that meaningfulness depends on engaging appropriate schemata. If a relevant schema does not exist, then a teacher needs to provide a context or schema for what is to be learnt. In this way material can be assimilated into existing knowledge structures and "cross-listed" with other schemata. Unless the teacher provides these contexts, the students will provide their own, which may be inappropriate.

Providing schemata or helping learners bring their own appropriate schemata to an instructional situation is an important way in which teachers can ensure meaningful learning. One way to do this is to use similar analogies ("Electric current is like flowing water' Long-term memory is like a giant card catalog") which allow us to incorporate new information into an already existing schema with only some minor modifications (*Ortony,* 1975).

As a teacher, whatever you can do to tap into the already existing knowledge structures that the learner brings to the instructional situation can help you make the material more meaningful for the learner.

Figure 1 : Saminathan Proposed Information Processing Model (SPIPM)



Model Description

Between a stimulus and a response, there are elaborate mental processes. We use the information processing model, shown in *figure 1* to help us think about how we process information cognitively. That model differentiates between the external world and internal cognitive events. [The area inside the broken lines].

Information processing often begins with the stimulus with input selected from the external environment. In order for the stimulus to work its way through the information-processing system, it must first elicit an orienting response (OR), a response that focuses our attention on the stimulus. This begins the internal mental process.

The stimulus or information from the environment is stored briefly, maybe for less than half a second, in our sensory register. The capacity of the sensory Register is probably unlimited, and it may include a separate "store" for each sense. Our attention determines what happens next. This is a particularly important point in the process because what we currently are processing in our working memory is a chief factor in determining the stimuli we attended to. If we pay attention to the new information coming to it, it moves from sensory Register to the short-term memory (STM) and working memory (WM) storage systems.

Short term memory is conscious memory of all that we are aware of at one time. The capacity of this store is limited to about seven chunks of information. The information here is not in the raw sensory form in which it exists in the sensory Register. And it can be pumped out by new information (forgotten). Working memory is very much like short-term memory, in fact it may be first a part of STM. Information in STM or WM, if rehearsed or encoded, remains the focus of attention or is passed along to long-term memory (LTM). The capacity of long-term memory, like that of sensory Register is probably unlimited. The information stored in long term memory is almost never forgotten, although we may not search for it.

Attempts should be made to develop "synesthesia" through information processing approach which will yield enormous results in the area of cognition. Luria (1968) the Soviet Cognitive Psychologist reported "A man who never forgets anything, he seems to have a memory system that depends on extreme "synesthesia", a condition in which stimuli of one sensory system produce images in another sensory mode."

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Conceptual Innovations for Using a Library

Anand P. Srivastava*

The passport for living in the world of XXI century is the ability for "independent learning" and visa for entry into it is, acquaintance with "information technology". It is a global question today being debated in all campuses — from Harvard to Delhi — as to which section of a university should have specific responsibility for cultivating abilities of "learning skills" and literacy of "information technology" in the youth. It is a university graduate who becomes a school teacher. If he or she is equipped with learning skills (LS) and information technology (IT) during college life, he/she can take the mission to schools. Various subjects under the faculties of sciences, humanities and school sciences have clearly found "learning skills" (LS) and "information technology" (IT) exogenous to their disciplines and have, therefore, allocated these species to the genus of library and media centres in educational institutions. This allocation has been through a unanimous resolution because there is no other claimant of these roles in educational institutions. The result is that for developing independent learning skills and for cultivating literacy in information technology, the library has moved centre stage, in schools and colleges.

The Library and the Librarian

Once the library obtained such a favourable biological mutation, the human factor (in the librarian) responsible in moving the library for such important roles is bound to obtain ratiocinative value. But we must know how should we really work. The prevailing attitude in our educational culture appears to be, "Library is important. But the Librarian (as the prime mover of library) may not be really important. At least, she or he does not appear to be able to command that importance". We somehow forget that the librarian could help in the following areas :

(i) there is very wide range of learning resources which should be used in schools and colleges, for various ages and abilities,

(ii) teachers and students need assistance and guidance from the librarian for using these resources effectively, and

(iii) there should be a sequential programme for developing skills from primary to post secondary stages, for which resources may be available for use within the institution concerned or outside the institution.

A qualified librarian, possessing the same academic credentials as teachers and others do, can contribute, in proper environment, in cultivating learning skills. The librarian can work constructively on learning skills curriculum, which contains the following :

(i) ability to locate and select resources,

(ii) ability to interrogate and interpret the contents of the resources, and

(iii) ability to communicate the acquired knowledge and understanding through general patterns.

The modern roles of school libraries have been identified and emphasised by HMSO publication of 1984, *School Libraries : the foundation of curriculum* in the following paragraph :

> "Today's school children will one day be responsible for creating the Nation's wealth and organising its society. An ability to learn throughout life will be crucial in equipping them not only for the industrial life of the nation but to find happiness themselves and contribute to that of others. It is widely recognised that they must learn how to learn. A central feature of the learning process is learning how to deal with information. Information exists in increasing quantity and comes from a variety of sources through an ever increasing range of media. An ability to cope with these changing circumstances is not innate. It must be acquired."

Developing Learning Skills

The Library Association, London, has stated the following details for developing learning skills in schools through the library and the librarian in collaboration with the subject teacher :

> Traditionally, library skills, user education and information skills sessions concentrate on finding information with little emphasis on defining what information was required or on how to use and evaluate it effectively. In recent years, Heads of

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Library and Information Services have collaborated with teaching staff to introduce cross-curricular training in this much broader area of learning skills. The following learning skills form the basis of the learning process required by the new curricula.

Planning,
locating and gathering,
selecting and appraising,
organising and recording,
communicating and realising, and
evaluating.

The Chartered Librarian, as the school/college's learning resources specialist, in collaboration with the teachers can ensure that pupils of all abilities are provided with resources to enable them to learn these skills and with the opportunities, integral to the curriculum, with which to practise them.

Planning Skills

Planning skills are the essential pre-requisite of any task, assignment, project, essay or topic. The Head of Library and Information Services plays an indispensable part in this planning process, advising both the staff and the pupils of resource availability and thus the viability of any assignment, at the very beginning of the learning process. Brainstorming, appropriate question framing and keyword identification are essential skills that require practice at this stage of the learning process.

Location and Gathering Skills

Locating and gathering information for course work assignments, problem solving exercises and other learning activities are fundamental skills which are too often assumed, yet require practice at increasingly sophisticated levels. An understanding of alphabetical and numerical order and tracking down source material from the libraries, organisations, computer databases and people outside school/college, all require expert guidance and advice and appropriate opportunities to practise. Reinforcement is required of these location skills, related to the whole curriculum and developed within a subject context. This will involve the use of indices, a wide variety of reference sources and the full range of information technologies from video, videotex and interactive video to on-line databases, CD-ROM and satellite television. Methods of generating information by survey, interview, experiment or observations, or by using prior knowledge, also need to be practised.

Selection and Appraisal Skills

Pupils also need to develop critical, evaluative thinking skills. They need guidance from the Head of Library and Information Services in learning how to identify relevant, up-to-date and authoritative information, available within school/college or from outside sources, and in detecting any bias or inaccuracy. A wide range of resources needs to be consulted, compared and appraised, to ensure that hypotheses and conclusions are formed upon the widest possible knowledge base.

Organisation and Recording Skills

Dealing with the information that has been gathered and selected also requires the guidance of the Chartered Librarian, who is trained in the management and use of all information, including audio-visual and other information technologies and in methods of organising information. Alternative processes of note taking (using diagrams, audio or video recordings or photography, for example) and of storing information (using cards, files or computerised technologies) need to be learnt alongside traditional skills such as making precis, citing of quotations and tabulation of results. The organisation of any assignment, in whatever format, requires an understanding of structural conventions such as headings, chapters and references. The maintenance of full and accurate bibliographies is an essential skill that also needs to be practised in all research situations from an early age.

Communication and Realisation Skills

Communicating the results of any enquiry, or realising a design or composition in any practical subject, in a way that demonstrates true understanding and interpretation is one of the most difficult learning skills that has to be attained. Heads of Library and Information Services are well aware of the potential for plagiarism and have initiated, with teaching colleagues, alternative approaches to the presentation of information, from audio and video recordings to computerised databases, as alternatives rather than replacements for the written word. The emphasis on the realisation of original work in practical subjects is further evidence of the importance attached to these skills in modern curricula.

Such is the success of these alternative approaches that examinees in many subject areas now accept assignments in any format. However, opportunities to practise and develop skills in the use of these information technologies are required at a much earlier stage in pupils' school careers.

Evaluating

Evaluating the learning process, the information content and its form of presentation is an equally important stage of any assignment. Relating the finished product to the original plan, determining the strengths and weaknesses of the learning process and reflecting on improvements are essential considerations for the pupil, the teaching staff and the Head of Library and *Information Services*.

All these skills need to be introduced, practised and developed in the widest possible range of subject contexts and age phases. Modern curricula demand that a wide variety of methods, both print and technology based, should be used with pupils working both on their own and in different group sizes. Heads of Library and Information Services are not identified with a specific area, and have expertise in matters relating to information handling, learning resources and the learning process. Thus, they are able to maintain an overview of learning skills in the school and the college.

With their links with other institutions, Heads of Library and Information Services are able to ensure that these skills are developed as part of a sequential programme and introduced to pupils at the appropriate time in their school and college careers.

Conceptual Innovations

The school and college librarians in developed countries are actively participating in all the above mentioned roles of the school and college system. In our country, however, the situation is dominated by neglect from authorities. The five fundamental differences described in the Table below require study and suitable efforts on the part of the school and college administration.

Library in Computer Literacy

As regards the role of library in schools and colleges for providing literacy in information technology, a computerised library can teach the following skills to students and teachers :

1. collecting information and entering it into a database,
2. devising ways for gathering information,
3. knowing how to gather all the information on a theme,
4. selecting and interrogating a computer database,
5. asking such questions which identify needs,

Table : Roles of Librarians in Developed and Developing Countries

In Developed countries	*In our Motherland*
1. School and college librarians are involved in curriculum training.	1. School and college librarians remain ignorant about curriculum details.
2. School and college librarians participate in academic meetings conducted in schools and colleges like other Teachers Incharge of various subjects.	2. School and college librarians are kept out of such meetings.
3. School and college librarians meet subject heads regularly for what they can offer for developing learning skills in students.	3. Both school and college teachers and librarians are not properly aware of the details of learning skills. They never meet to discuss this area.
4. School and college librarians are familiar with cross-curricular links within each subject to ensure effective use of resources and learning skills programmes.	4. School and college librarians do not develop this knowhow. They may know some resources but learning skills programmes may be Greek and Latin to them.
5. School and college librarians apply skills based approach to learning through relevant, up-to-date and authoritative information from wide range of sources including books, audio-visual material and information technologies.	5. School and college librarians, through library periods, merely issue and return books available only through *happen-stance*. No planned actions from acquisition to use levels are applied by any sector.

6. estimating the resources available,
7. knowing how an equipment behaves to signals and commands,
8. knowing sources of information,
9. knowing about software,
10. communicating meaning by generating pictures, symbols, words, etc.,
11. presenting information in different forms, and
12. learning presentation techniques through various equipment.

Full courses on academic libraries and learning skills shall have to be developed by our library schools in universities on the lines of UGC Curriculum Development Committee Report (1993). Some special courses and seminars may be organised for select school librarians and school administrators who may not be fully aware of the roles of school libraries in modern schooling pattern.

It is generally not clear to teachers and educational administrators as to how a library can help in cultivating and developing learning skills and how the library can provide literacy in information technology, because we are not using various kinds of modern literature available in libraries for teaching and learning processes. Various types of information available in a library can be used by teachers and students to following purposes :

1. Devise clear set of questions requiring appropriate information sources available in the library for their answering;
2. Library helps in planning of group presentation by students;
3. Library provides a range of materials for independent study by students thus helping them develop skills of understanding, accuracy and fluency as compared to merely listening to teachers in classrooms;
4. Library helps in developing among students the skills of selection, retrieval and combination of information. In these areas the librarian can be of real help;
5. There are books in a library which can develop the skill of prediction. It happens when a librarian advises a student to read such stories which, based on what has happened, can make one predict what may happen next;
6. Librarians have works which show patterns and features of various types of presentations which are used to inform, regulate, assure and even persuade;
7. Libraries also have books which demonstrate how non-chronological writings can be converted into chronological writings;
8. Libraries also have picture books, books containing symbols, words, phrases, etc which help in developing communication and learning skills;
9. There are books in a library which show how language varies between different types of texts;
10. There are different types of books and work books, stories and poems which cultivate and develop skills of inference, deduction and analysis;
11. The techniques of evaluation and conventions of presentation can also be developed through specific literature available in libraries; and
12. There are special types of books that help in developing skills of judgement and effectiveness. Numerous simple case studies have been written and produced which a library should possess.

Our approach to a school or college library is backward because we send students to school library as a crowd only to borrow and return books and nothing else. This is not the proper use of a library in modern times. In colleges, even "students as a class" are not required to visit the library, which is an optional unit in higher education.

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Universities and National Development

Hon'ble Shivraj V. Patil, Speaker, Lok Sabha, delivered the Convocation Address at the twelfth convocation of the Himachal Pradesh University, Shimla. He said, "It goes without saying that universities are not only centres for imparting knowledge, but they also occupy a key position in the development strategy of a nation. It is they which can generate the kind of intellectual or professional environment which is needed in a developing country like ours. A nation is moulded by its universities and centres of learning. Universities not only impart training, but also seek to create among students a thirst for knowledge and a desire to extend the frontiers of knowledge through research and experiment. We can build a strong and progressive nation only with a good university system." Excerpts

India is a land where the human mind has soared to incredible heights of thought and philosophy. It is here in this land, that perhaps, for the first time, fundamental questions were asked of the origin and the nature of the universe, and of the predicament of mankind. The tradition of the pursuit of knowledge was, therefore, long established, and learning was held in high esteem.

The history of our university education goes back to antiquity. In the distant past, the Universities of Takshasila and Nalanda acquired fame for their notable contribution to the body of knowledge. During the ancient times, the main purpose of higher education was "pure knowledge for its own sake" without any concern about its "utility for life". The situation has now changed. Contemporary society expects our universities to shoulder the responsibility of ushering in a new era and contribute to the solution of various problems afflicting our country.

The significance of education as an academic exercise which helps man to march forward in his quest for truth and excellence can hardly be over-emphasised. University education, as the very name indicates, is concerned with higher learning. The university is a place of independent thinking, where young minds open up and evolve in an atmosphere of freedom and amidst the clash of opinions and ideas. University education is not just an objective. It is also an instrument to reach the higher stages of human development. We are not only to cherish and treasure knowledge, but also make good use of it.

It goes without saying that universities are not only centres for imparting knowledge, but they also occupy a key position in the development strategy of a nation. It is they which can generate the kind of intellectual or professional environment which is needed in a developing country like ours. A nation is moulded by its universities and centres of learning. Universities not only impart training, but also seek to create among students a thirst for knowledge and a desire to extend the frontiers of knowledge through research and experiment. We can build a strong and progressive nation only with a good university system. A university is not a place where formal education is imparted merely to enable the students to earn a living. It is rather a place where everyone strives for excellence; where young boys and girls are given such education as may liberate them from entrenched prejudices. True education is indeed a liberating force, cutting across barriers of caste, creed, etc and enables us to think rationally, logically and scientifically.

The purpose of education should not be confined to learning, what is in the books alone. Rather, it should build up the ability among students to judge issues critically and take decisions on them. The basic aim of education is to make us fit to face the challenges of life. Education makes us better citizens. Virtues like tolerance and discipline cannot be developed overnight; they are cultivated from an early age. It is only a good education system that can establish a healthy relationship between the individuals and society. This relationship is mutually complementary. The development of the individual enriches and improves society; and a well-organised and free society provides wider opportunities for the individual to grow. Education must inculcate right and humane qualities is an individual. Moreover, it should develop higher faculties and create a superior culture for better social order by shaping appropriate strategies for the adjustment of an individual in a society.

The importance of education in the challenging task of nation-building is obvious. In our country, it should bring our ancient heritage to the new generation and reinforce our accepted values. It has to be a forceful tool for the cultivation of social and moral values. In our plural society, it should foster universal and eternal values oriented towards the unity and integration of our people.

I recall here what our first Prime Minister Jawaharlal Nehru once said :

> A University stands for humanism, for tolerance, for reason, for progress, for the adventure of ideas and for the search of truth. It stands for onward march of the human race towards higher objectives. If the Universities discharge their duties adequately, then it is well with the nation and the people. But if the temple of learning itself becomes a home of narrow bigotry and petty objectives, how then will the nation progress or a person grow in stature ?

Our system of education cannot be limited just to degrees. It must look at vocational training, bringing in the skills relevant to daily life and to the type of work the individual will have to do. Our system must be such that it does not push people into craving for white-collar employment. There is much in our education system which requires to be changed. It should have a practical bias with emphasis on the development of skills in using theoretical knowledge for practical purposes. Educational programmes must be supported by practical training in farms or factories. Such arrangements will establish linkage between education and employing agencies to the mutual benefits of both. Besides, the courses offered should be relevant to the needs of our people and help to fulfil their hopes and aspirations.

In India, today it has become imperative for us to rise above narrow-bigotry and petty objectives. National vision and national integration have been inherent in our culture and civilisation. But, they have become today indispensable for the progress of the country. The compulsions of development have made unity of India and interdependence of India and of Indian people a reality and a necessity. The youth have inherited India with all its gigantic problems and exciting opportunities and prospects. They can be part of the great and exciting task of uplifting millions of our people from poverty, disease, ignorance, malnutrition and building a strong, progressive India and contributing to the peace and stability of the world.

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Refresher Course in Environment

A 3-week Refresher Course in Environment was recently organized by the Academic Staff College of Himachal Pradesh University, Shimla. Inaugurating the programme, Prof. Yoginder Verma, Director, Academic Staff College, H.P. University, said that there was an over-riding concern for environmental protection throughout the world. Environmental problems, he said, had physical and social dimensions. For example, we needed advanced technological knowhow to harness the solar energy, but at the same time we have to take this technology to the people and educate them to accept it. The important question was how to do it? The immediate task was to make people aware about those social issues that were at the core of the environmental problems. The teachers from schools to universities could play an important role here. The reason was simple and straight forward — a large segment of society particularly in whose hands lies future of our planet comes in contact of teachers directly or indirectly.

Dr. R.S. Pirta, Coordinator of the programme, said "the goals of environment education set forth by the First United Nations Conference on Human Environment, at Stockholm, held on 5th June, 1972, are : *first*, to foster clear awareness of, and concern about, economic, social, political, and ecological interdependence in urban and rural areas. *Second*, to provide every person with opportunities to acquire the knowledge, values, attitudes, commitment and skills needed to protect and improve the environment. *Third*, to create new patterns of behaviour of individuals, groups, and society as a whole towards the environment. Thus the key words in an environmental education programme are, awareness, knowledge, attitudes, skills and participation". He added, "The fundamental principles which should guide us while imparting environmental education are: (i) Sublimation of attitude to conquer nature, (ii) To become a part of nature, and (iii) To live in tune with nature".

The methods of teaching adopted included lecture method, lecture demonstration method, discussion method, and field visits.

The participants were given indepth experience about the plant life through slides and field visits. Biotechnology and mycorrhizal technology to improve plant growth were explained. Other important topics covered were consumer protection movement, law and environment, administrative problems in environment protection, global issues in environment, natural resource mapping from satellites, psychological issues involved in environmental problems, the link of environment with economic development and role of NGOs in saving the environment.

The participants delivered lectures on animal welfare, transhumance, poetry and environment, social, economic and cultural aspects of environment. Group discussions were held by the participants themselves on legal issues in environment, peoples' participation in natural resource management, and man and nature relationship.

The graduate and postgraduate level common syllabi on environment received from the University Grants Commission were circulated among the participants for study. After detailed discussion it was felt that these syllabi on environment were lacking on various topics which were considered important by social scientists. The consensus was that the syllabi on environment should be framed faculty-wise with some common interfaculty topics.

The course contents of the programme were divided in two parts i.e. (i) Concept of Environment — Human religion, culture and history, vedic, Buddhism, folk art, songs, stories, etc., contemporary viewpoints, ecodevelopment, ecology of mind, deep ecology, the gaia, the way; and (ii) How to save environment : Socioecology — societies, environment and conservation ethics, social movements, gender issues, ecosystem mapping, village natural resource management committees, sustainable development, technology and society, traditional and modern agriculture, parks and people, consumerism, global issues.

Low-Cost Language Teaching Aid

The Centre for Electronics Design and Technology (CEDT) is reported to have developed a low cost teaching aid to teach languages on a television. An easy to use microcontroller based hardware teaching aid *Sarthi*, when connected to a TV replaces the use of a personal computer in imparting primary education. *Sarthi* has been tested to work under stringent rural environments both on mains power supply or 12 V battery. The testing has been carried out by Regional Computer Centre (RCC), Chandigarh.

The teaching aid has been developed by CEDT engineers Mr Deepak Sayal, Mr Deepak Sahni and Mr Rajeev Agrawal.

Incorporating advanced software *Sarthi* has been aesthically designed to reproduce complex script formations smoothly. With six button key pad it offers a number of fundamental advantages like the fine moment-to-moment control in the learning process and support which allows students to work independently while maintaining a uniform training methodology and consistency in presentation. *Sarthi* can be produced at Rs 2500 in bulk quantities.

Development of any Indian or foreign languages on the teaching aid is possible in a very short time through a language development environment specifically designed for this purpose.

Under the project sponsored by the Department of Electronics, Government of India, units of *Sarthi* are being supplied with National Literacy Mission primer for Punjabi to RCC, Chandigarh, for carrying out field trials to check their effectiveness in imparting primary education. Earlier, units of the teaching aid with National Literacy Mission primer for Hindi were supplied to RCC and are operating at various literacy centres in Haryana.

Mr R.S. Khandpur, Director, CEDT, said with advances in audiovisual and computer technology it was often suggested to impart adult education with the help of personal computers after recording the lessons on a floppy diskette. However, he said, this method was not too successful as the floppy behaved erratically at times and it was difficult to carry personal computers to far off places, especially to rural set-ups. A PC along with diskette could not be put to mass use because of the high cost involved. Moreover, use of personal computers required trained people for operation.

Mr Khandpur said in *Sarthi* floppy diskette was not needed. The aid could easily replace a computer. He said five units of *Sarthi* in Hindi had been sent to Haryana to carry on the trials. The CEDT was getting a good feedback from there and soon production would be started in large numbers, he added.

Colloquium on Indo-Korean Relations

A Colloquium on Indo-Korean Relations was recently held at Jawaharlal Nehru University to mark the commencement of a three-year degree course in Korean language from the new academic session. Those who participated in the Colloquium said that the course would enable better understanding of socio-economic and technological transformation which Korea had witnessed in recent years. They expressed the hope that the new course would create a new generation of experts in Korean language and would meet, to some extent, the growing demand for Indian experts with sound knowledge of Korean language.

Prof. Yoginder K. Alagh, Vice-Chancellor, in his inaugural address, said that Koreans, being the hardest working people in the world, had brought about a miracle in their economy. Therefore, we have to learn a lot from their experience. He said that the Korean language programme at JNU had to have a programme of both language and culture in order to create a permanent and endearing interest in Korea.

The Korean Ambassador, Mr. Byung Yong Soh, who delivered the keynote address, said that in view of improvement in business environment in India, Korea looked forward to exciting scope of fruitful mutual cooperation between the two countries in political and diplomatic fields. He also presented teaching aids for the students.

New Courses at Agra Varsity

Dr Islamullah Khan, Vice-Chancellor of Agra University, said that the university would start five new courses soon to bring its syllabi abreast of the times. He made this announcement while addressing a seminar on "prospects and challenges of higher education in U.P." held in Agra recently. He said the new courses would be on environmental sciences, informatics, industrial development and computer-aided communicative and information systems.

A suggestion made at the seminar was the necessity of bringing industry and education closer together so that education could fulfil the growing demands of the industrial sector.

The seminar was addressed, among others, by Dr K.C. Pandey, Vice Chancellor, Chaudhri Charan Singh University, Meerut, Dr Rajeshwar Prasad, former Director, Institute of Social Sciences, Agra University, Dr B.K. Singh, Head of the Department of Hindi, R.B.S.

College, Agra, and Mr Hardeo Singh, Administrator, Agra Municipal Corporation.

The seminar was presided over by Professor Angne Lal, Vice-Chancellor of Dr. Ram Manohar Lohia University, Faizabad.

Seminar on Publishing Rights

The AFRO-Asian Book Council and the International Institute of Publishing Management are jointly sponsoring a 3-day international seminar on the Exchange of Publishing Rights in Singapore from 1-3 December 1995 to be organised by the International Trade Fairs (S) Pte Ltd, Singapore.

The seminar is designed to bring the publishing fraternity of the West and their counterparts in the Asia Pacific region closer to each other and to discuss how best to promote exchange of publishing rights in a more profitable way.

The seminar will help Western publishers obtain a better understanding of the different publishing situations and market conditions in various countries and to make right contacts in the Asia Pacific region. For publishers in the Asia-Pacific region, the seminar provides an excellent opportunity to learn every aspect of negotiating/buying rights from publishers in other countries.

The topics proposed to be discussed at the seminar include (1) Promoting Internationalism in Asia-Pacific Book Industry; (2) The Relevance of Rights Trading to Coping with the Emerging Book Needs; (3) Promoting Rights Trading Between Publishers within the Asia-Pacific Region; (4) Buying Rights from English Speaking Countries; (5) Buying Rights from Non-English Speaking Countries; (6) How to Negotiate Copyright Argeement with Book Publishers Abroad; (7) The Role of Literary Agents in Promoting Rights Trading; (8) Promoting Asia-Pacific Writers Abroad, and (9) International Copyright and Problems of Piracy.

Further details may be had from Mr Abul Hasan, Director, Afro-Asian Book Council, 4835/24 Ansari Road, New Delhi - 110002 OR Mr. Kunnuparambil P. Punnoose, President, International Institute of Publishing Management, Kunnuparambil Buildings, Kurichy, Kottayam- 686549, India.

IIT Guwahati

The sixth IIT has started functioning at Guwahati. The 700-acre campus site at Amingaon in north Guwahati is bigger than the campuses at Delhi and Kanpur. According to Prof D.N. Buragohain, the first director of IIT Guwahati, this institute is expected to improve the standards of academics in the north-east. This will also help improve the work culture in the state and raise the level of aspiration of the students of north-east. This year, only six students made it to the Joint Entrance Examination (JEE) list from the north-east.

The first batch comprises 75 students, selected through the JEE, with 30 teachers. In the next five years, the IIT plans to expand facilities and enrol 400 students every session. Starting with three engineering disciplines, mechanical, computer science, and electronics and communications, the Guwahati IIT also plans to introduce departments like petroleum engineering, industrial design and applied biological sciences.

Fund for Poor Students

The Jawaharlal Nehru University (JNU) is reported to have created an endowment fund for providing financial assistance to students from the economically weaker sections of society.

An initial corpus fund of Rs 4 lakh has been raised. It has been financed by increasing the cost of application material for candidates seeking admission to various programmes of studies at the JNU. The hike was effected this year.

The university has also sought contributions from its faculty and non-teaching staff. In an appeal, the JNU Vice-Chancellor, Prof. Y.K. Alagh, has requested the staff to contribute at least one day's salary to this fund. He stated that a large number of students belonged to the weaker sections. "It will be really unfortunate if they are forced to discontinue their studies for want of funds or lack of financial support. It is thus the duty of all of us to see that this does not happen even in a single case. Such students deserve sympathetic treatment besides financial support from the University, which has, of course, its own financial constraints", the Vice-Chancellor said.

Training Programmes in Book Industry

While book industry training is being imparted in one form or another in many countries, the Afro-Asian Book Council is interested to concentrate on non-conventional themes which, though vitally important for the progress of the book industry, are not usually covered by the training programmes. The idea is to take up one such theme each year beginning from 1995-96 until the close of the century. The duration of each course may be about ten days with a judicious combination of classroom lectures, practical work and field visits. While the publishing professionals from Africa and the Asia-Pacific will be invited to participate in the training programme, the faculty may consist of an international team of experts specializing in the subjects to be covered. The following broad themes are proposed to be taken up in the next five years :

1. *Author Development,* a somewhat neglected area which is basically important for book development,

2. *Copyright,* which it is becoming increasingly difficult to protect in the face of new communication developments and rapid changes,

3. *Book Industry Training,* i.e. the training of the trainer, as publishing skills cannot be adequately improved without an adequate background of the art of book industry training,

4. *Electronics in Publishing,* to familiarise the book community with the increasing use of computers, CD-Roms, silicons, etc. and desktop publishing and how they can be interwoven to the best advantage of publishers in developing countries, and

5. *Book Exhibitions,* why, when and how to organise them so as to achieve optimum benefit, as book fairs are mushrooming at national and international levels and some may not yield satisfactory returns.

Aside from the annual training courses mentioned above, the Council will continue to offer short-term placements in India to its members or to the trainees sponsored by them. It is also willing to mount on-the-spot training courses for the book industry personnel of a country in collaboration with the local experts. The Council can also undertake consultancy assignments for introducing Book Publishing into the university curriculum, if called upon to do so.

Further details may be had from the Director, Afro-Asian Book Council, 4835/24 Ansari Road, New Delhi, 110 002.

Essay Competition

The Indian Association for General Relativity and Gravitation (IAGRG) invites Essays from young workers in the field of General Relativiry and Gravitation. The award winning essays will be presented at the next meeting of the IAGRG to be held in February 1996 at Institute of Mathematical Sciences, Madras.

The topic of the essay can be in any aspect of General Relativity and Gravitation and should contain about 1500 words, typewritten, double spaced on A4 size/bond paper. The age of all authors should be less than or equal to 30 years on January 1996. Evidence of age should be supplied by all authors along with the essays. Awards will be given for three essays in order of merit.

The essays should be sent to the following persons (one copy each), to reach latest by November 30, 1995: (i) Professor Bala Iyer, Raman Research Institute, Sir C.V. Raman Avenue, Bangalore 560 080; and (ii) Dr. V. Chellathurai, IUCAA, Post Bag 4, Ganeshkhind, Pune-411 007.

Study in Britain

The British Council Division of The British High Commission in India conducts a weekly briefing session at the Education Counselling Service (ECS) Centre at its premises 17 Kasturba Gandhi Marg, New Delhi, on Saturdays 11 am to 12 noon.

Schedule for August - September 1995 is as follows:

26 August : Postgraduate Studies; 9 September : Undergraduate Studies; 16 September : Postgraduate Studies.

Further details may be had from ECS Centre, Tel: 3711401/240.

The British Council Division also distributes *Study in Britain* — a publication that provides information on the major scholarships and fellowships available to Indian students for studying in Britain. The book lists over 300 schemes for undergraduate and postgraduate study and research.

Copies are available at (i) British Council Division, 17 Kasturba Gandhi Marg, New Delhi-110 001; (ii) The British Library, Mayfair Building, Hazratganj, Lucknow-226 001; and (iii) The British Library, Guru Tegh Bahadur Complex, Roshanpura Naka, Bhopal-462 003.

The price of the publication is Rs. 40 (Rs. 50 by post) payable by money order, postal order or bank draft.

Alumni Directory

Doctor Harisingh Gour Vishwavidyalaya, Sagar (Formerly University of Sagar) is celebrating its Golden Jubilee Year from July 1995 to July 1996. To mark the occasion, the university has decided to publish a *Booklet* containing the names of all those persons who are Ex-Office Bearers of Students' Union/Chhatra Mahasangh and/or students of the University who have earned extraordinary achievements in their respective fields. All concerned may send their Biodata in about 100 words to Dr D.P. Khare, Dean, Students' Welfare, Dr. Hari Singh Gour Vishwavidyalaya, Sagar - 470 003 latest by 4-9-1995 on the following points : (a) Date of Birth, (b) Period during which you were a student, (c) Office held in Students' Union/Chhatra Mahasangh, (d) Present Profession, (e) Postal Address, and (f) Any other important achievements.

News from Agricultural Universities

ICAR Technology Transfer Plan

The Indian Council of Agricultural Research (ICAR) proposes to launch an institution-village linkage programme to facilitate technology transfer and assessment to the village level. This was revealed by the ICAR Director General, Dr. R.S. Paroda while addressing a function organised to release the annual report of the M.S. Swaminathan Research Foundation (MSSRF) in Madras recently. Dr. Paroda said under the programme, integrated packages would be developed to provide the terms of assessment and transfer of technology. "It would have great relevance for improving farming techniques," he added.

The ICAR was also planning two more projects — one for creating an information system to link all agricultural research institutions so that the research work would be beneficial to all and an Agricultural human research development project to train and update farmers capabilities.

Dr. M.S. Swaminathan, Chairman, MSSRF, giving highlights of its activities in the last five years and of the 1994-95 annual report, said the Foundation and its Centre for Research on Sustainable Agricultural and Rural Development (CRSARD) had been conducting research and training programmes in integrating environmental and equity concerns in rural and farm development programmes.

One of the programmes initiated was the development of a methodology for Coastal Systems Research to link the livelihood security of coastal communities and ecological security of coastal areas. A Union Government-aided project under the programme led to the establishment of a genetic resource centre for adaptation to changes in climate and sea levels at Pichavaram in coastal Tamil Nadu.

Another project, Establishment of International Network for the Conservation and Sustainable Utilisation of Mangrove Forest Genetic Resources, had three components : identification of mangrove genetic resources conservation centres and demonstration sites in Asia, Oceania and in West and Central Africa; organisation of a trainers training programme for managers of these centres; and development of a mangrove ecosystem information service.

Research in bio-diversity and bio-technology led to the standardisation of micropropagation protocols for 15 endangered species of plants and the development of several bioindicators to monitor the health of rich ecosystems, mostly in coastal Orissa.

Under an ICAR project, work was intensified on spreading the message and methods of integrated pest management (IPM) in groundnut, soyabean and cotton. Dr. Swaminathan said the State Government allotted 2.5 acres of land adjoining the Centre (at Taramani). It would be used to demonstrate the opportunities available for water harvesting and management and for construction of a regional technical resources centre of CAPART and a farmers' home.

Outlining his plans for the next five years, Dr. Swaminathan said in coastal systems research work had already started on coastal agroforestry and on eco-redevelopment of selected degraded mangrove ecosystems. A major emphasis was placed on safeguarding intellectual property rights of tribal and rural families in relation to plant genetic resources. The coming into existence of the WTO along with associated instruments such as Trade Related Intellectual Property Rights now, meant that agricultural research functioning in non-IPR environment for thousands of years, might have to be reorganised.

Considering the implications, the Foundation had developed a Draft Plant Varieties Protection Act that provided an implementable and transparent method of legally protecting the interests of women and men who had identified, preserved and improved the basic genetic stocks which go into the making of successful varieties. It was organising a resource centre for farmers' rights to assemble all relevant information as a database, to help defend the tribal women's interests in courts.

Dr. K.V. Raghavan, Director, CLRI, presented an award for environment protection (named after Dr. Swaminathan), to the Pallavaram Tanners Industrial Effluent Treatment Company Limited that had set up a treatment plant to serve the over 100 leather units in

Pallavaram Pammal belt. The award has been instituted by the Earthcare Group and the Rotary Club of Madras East.

Dr. M. Anandakrishnan, Vice Chancellor, Anna University, Madras offered his felicitations on the occasion.

Financial Assistance to Farm Graduates

The Indian Bank proposes to introduce Agrigems, a self-employment scheme for technical graduates in agriculture and allied fields, for providing infrastructural support in rural areas. An amount of Rs. 50 crores is projected to the disbursed under the scheme during the two-year period, 1995-97. This was revealed by the Chairman and Managing Director of the Indian Bank, Mr. M. Gopalakrishnan in Madras recently. He said the bank would also finance about 70 veterinary graduates initially on a pilot basis in association with the Tamilnadu University for Veterinary and Animal Sciences (TANUVAS), the Animal Husbandry Department of the Tamil Nadu Government and the National Bank for Agriculture and Rural Development (NABARD).

Graduates in agriculture, veterinary science, horticulture, agricultural engineering, dairy science, fisheries, forestry, etc would be eligible for assistance under the scheme. Financial support upto Rs. 10 lakhs per graduate would be extended for any productive venture to be set up in rural areas. Beneficiaries should be in the group 21-45. A margin money of ten per cent should be put up by the beneficiaries, though there might be some relaxation of the percentage in deserving cases.

Changing Horticultural Scenario

The challenges of population growth, shrinking land and natural resources, the fast eroding genepool, serious production constraints and post harvest losses have to be met to bring about a horticultural revolution, said Dr K L Chadha. Deputy Director-General (Horticulture) of the Indian Council of Agricultural Research (ICAR). He was delivering the Dr P G Krishna memorial lecture on "Changing Scenario of Horticulture in India" under the aegis of the Andhra Pradesh Agricultural University (APAU) in Hyderabad recently. Dr Chadha said that in spite of several teething problems the country had fared well on the horticulture scene.

Dr Chadha stressed the need for efforts to embark upon a massive area expansion under horticulture crop cultivation and by adopting cost saving technologies.

New Crop Varieties

The Mahatma Phule Krishi Vidyapeeth, Rahuri, has developed crop varieties "Kadwa" (NI-9947) of Wheat, Vishal (Phule G-87207) of gram and Phule Jyoti of Chilli.

'Kadwa' is high yielding (40 Q/ha), resistant to black and brown rusts with good grain quality. It is recommended for cultivation under late sown conditions in Maharashtra State.

'Vishal' of gram is high yielding (20 Q/ha), resistant to fusarium wilt, rich in proteins & methionine content. It has bold attractive grains with higher *dal* recovery and good cooking as well as roasting quality. Being bold seeded it fetches higher price in the market. It is indentified for release in Western Maharashtra.

Phule Jyoti of chilli grows upto 60-65 cm with dark green & broad leaves as compared to other varieties. The fruits are in cluster, 5 to 6 in number, dark green colour. All chilli fruits are ready to harvest at a time and are dark red in colour. The variety is recommended for dry and green chillies. Yield of Green chillies is 200 qt/ha. and that of dry chillies 25 qt/ha. The variety is less susceptive to aphids, jassids & powder/mildew. It is recommended for Kharif season.

Concept

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The papers in the volume review the existing structure of Panchayat Finance in historical context, discuss the important principles and problems of inter-governmental transfers as well as focus attention on the conceptual and operational problems before the State Finance Commissions in relation to Panchayat functions and finance.

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BOOK REVIEW

A Comprehensive Ethnography

Har Swarup Singh*

M Ramadass, T S Naidu and D Xaviour, Eds. Pondicherry. People of India. Volume XXXVI, General Editor Dr K.S. Singh. Published for Anthropological Survey of India by New Delhi, Affiliated East-West Press, 1994. Pp. xx + 513. Rs. 375.00.

The volume on Pondicherry is part of the Series, People of India, published by the Anthropological Survey of India (AnSI). The objective for the Series was to fill the information gap with regard to a very large number of communities in India. The AnSI had started collecting and presenting useful anthropological information since its establishment in 1945. Then, in October 1985, was launched the ambitious project People of India which has yielded valuable information on the human surface of India.

Under the Project, primary information was generated on the culture and language of people through a survey conducted in collaboration with local scholars. Secondary sources were utilised to collect bioanthropological information. Pains were taken to evaluate and sift the information collected, and to cross check the results. The data were fed into computers and workshops/seminars held to analyse, assess and refine the mass of qualitative and quantitative information. The final results under the project have been presented in two parts which are interrelated. The first comprises the ten-volume national series and the second consists of the State/Union Territory volumes, with detailed descriptive accounts of each community.

Coming to the volume on Pondicherry, it presents a comprehensive ethnographic profile of the various communities of the four pockets of the Union Territory (U.T.) in cultural and linguistic dimensions, alongwith information on biological aspects. Pondicherry, although basically a part of the historical, political and cultural milieu of Tamil Nadu, has some special features in its ethnographic mosaic. The French colonial connection led to the settlement of such communities as the Indo-French and Indo-Vietnamese. Also, Gujaratis and Rajasthanis who came to Pondicherry for business settled down. These elements led to some modifications in local social customs. Another special aspect of Pondicherry is the location of Aurobindo Ashram which brought in people from different parts of the country — Bengal, Orissa, Gujarat, etc. — attracted by the philosophy of integral yoga propounded by Shri Aurobindo and the Mother.

Results of study of sixty seven communities, ten of which are Scheduled Castes, have been presented in the book. All these have been studied in the four zones of the U.T. — Pondicherry and Karaikal which form contiguous zones of Tamil Nadu; Mahe, of Kerala; and Yanam, of Andhra Pradesh. The major features of the findings are:

— A majority of the communities (54) depend on land as their main source of income, eight communities depend on fishing and two on forests. There are thirty two land holding communities and thirty seven are landless. Persons from forty five communities are engaged in business, from forty two in self-employment, from forty in government service, and from twenty four in private service.

— Most of the communities (45) are regularly non-vegetarian and only seven are pure vegetarians.

— Social divisions, such as exogamous units like 'gotra', 'kilai', and clan, regulate marriages in most communities. Cross-cousin marriages are preferred by an overwhelming number of communities. The uncle-niece marriage is practised by forty nine communities.

— Hinduism is professed by forty nine communities, Islam by ten, Jainism by one, Buddhism by one, Christianity by six and traditional tribal region by one.

— The U.T. is multilingual, with as many as nine languages spoken. Tamil is spoken by the largest number of communities (38).

— Education is favoured for both

**India's High Commissioner to Maldives, Male, Maldives. Formerly Lt. Governor of Pondicherry.*

boys and girls. The modern system of health care is depended upon by all side by side with indigenous medicine. Family planning is widely favoured but a majority (48 communities) prefer a three-child norm.

The comprehensive introductory chapter, which is followed by detailed discussions of the various communities, covers geography of the U.T.; history; dress style and ornaments; language and dialect; bathing customs; demography; structural features of the population; social organisation; life cycle rituals; religion; food habits; civic organisation; administration; economy; arts and crafts; developmental programmes; and political awareness.

Under history, some interesting facts are covered. A special item may be mentioned as it shows how individual proclivities and whims have often played an important part in moulding history. The Marathas, who occupied Arcot without opposition, after conquests on the way, asked Benoit Dumas — the then French Governor of Pondicherry — to hand over two fugitive family members of the slain ruler of Carnatic, but Dumas refused to oblige. Still, the Maratha Chief Raghuji Bhonsle, who was very fond of French liquor, made his peace with Governor Dumas in return for thirty bottles of Nantes Cordial and thus was Pondicherry saved from the wrath of the Marathas!

The per capita income in Pondicherry is significantly higher than the national average and that of Tamil Nadu (which is close to the national average). The Centre's support for developmental activities has been commendable. A notable feature of investment under Five Year Plans of the U.T. is the very high share going to social and community services. As a result of the aid from the Centre and dynamism of the U.T. Administration, the social indicators are very good; in terms of health care, education, welfare, etc. Pondicherry compares very well with other States/UTs.

The adult literacy programme, aided by the National Literacy Mission (NLM), led to the achievement of full literacy in the U.T. However, the book under review gives very old figures — literacy rate of 55.85 per cent in 1981-82. In fact, one hundred per cent literacy (as defined under NLM norms) was achieved several years ago in Pondicherry — the second State/UT in the nation to achieve this distinction. The then Vice President, H.E. Dr. Shanker Dayal Sharma, came to Pondicherry to declare the Territory fully literate and bless the post-literacy programme. The achievement was widely acclaimed, including the recognition bestowed by UNESCO through the prestigious King Sezong Award.

This lack of updating of some facts constitutes a minor shortcoming of the book. Another example is the statement on page 369 that "No Rajasthani works in a government office." While it may not be definitely known as to how many Rajasthanis are currently working for the Government, certainly there is one at Raj Nivas holding an important position for the past four years or so.

Also, the authors, in some cases, seem to have relied too much on information available in the Gazetteer of India. Although it is a good source, but for information on topics such as Aurobindo Ashram and Auroville — on which first-hand information is available from people, from the publicity literature, and from the writings of Shri Aurobindo, the Mother and others — it does seem incongruous to quote the Gazetteer about the basic aim of the Ashram (as done while describing the Bengali/Ashramite community of Pondicherry). Similarly, the source for a note on Auroville (Appendix II) is the Gazetteer. The narrative is somewhat dry. There is no reference to Auroville Foundation. The five lines or so on current life in Auroville could well have been expanded. Even within the present space limit, the note could have been improved considerably without much effort.

There are a few other small slip-ups. For instance, the heading, The Communities, given in the Contents is missing at the beginning of the section. Thus, one goes straight after Introduction to "Adi Dravida". Bangali at page 99 becomes Bengali at the top of page 100. On the whole, however, the book is produced well, for which the credit goes to the distinguished team of editors, with some of whom the reviewer has had the pleasure of interacting over the years.

The volume, a comprehensive ethnography of the people of the Union Territory, is quite readable and very informative. It should prove useful to scholars, social workers, administrators and policy makers.

To Our Contributors

Contributors are expected to submit only original articles for publication in the *University News*. If an article is found to be plagiarised, it will be the sole responsibility of the contributor to face legal action, if any.

RESEARCH IN PROGRESS

A list of research scholars registered for doctoral degrees in Indian Universities

SOCIAL SCIENCES

Library & Information Science

1. Ajikumary, T. **Children's literature in Malayalam: A survey and bibliometric study.** Kerala. Dr G Devarajan, Department of Library and Information Science, University of Kerala, Thiruvananthapuram.

2. Harikumar, S. **Translated works from foreign and Indian languages in Malayalam: A survey and bibliometic study.** Kerala. Dr G Devarajan, Department of Library and Information Science, University of Kerala, Thiruvananthapuram.

3. Jayasree Thankom, P. **Design of an information system for planning and development activities in Kerala in the background of the information imperatives and existing information input.** Kerala. Dr G Devarajan, Department of Library and Information Science, University of Kerala, Thiruvananthapuram.

4. Lalitha, M. **An investigation into the role of the British Council libraries in higher education in India.** Kerala. Dr G Devarajan, Department of Library and Information Science, University of Kerala, Thiruvananthapuram.

5. Majeed, K.C. **Role of university libraries in science and technology research in Kerala.** Kerala. Dr G Devarajan, Department of Library and Information Science, University of Kerala, Thiruvananthapuram.

6. Ravindran, K. **An investigation into the need for and features of the academic library system for higher education for Kerala.** Kerala. Dr G Devarajan, Department of Library and Information Science, University of Kerala, Thiruvananthapuram.

7. Saleena, P.R. **An investigation into the factors affecting the application of information technology in Indian university libraries.** Kerala. Dr G Devarajan, Department of Library and Information Science, University of Kerala, Thiruvananthapuram.

8. Sudha, T. **Science communication through popular Malayalam journals: A bibliometric study and cumulative index.** Kerala. Dr G Devarajan, Department of Library and Information Science, University of Kerala, Thiruvananthapuram.

Psychology

1. Madhu. **Study of biochemical and physical status of diabetic patients with special reference to duration and age.** Punjabi. Dr M S Sohal, Head, Department of Sports Sciences, Punjabi University, Patiala.

Political Science

1. Shajimon, M. **Voluntary organisations and socio-political development : A study on the role and impact of voluntary organisations in Kerala.** Kerala. Dr T Varghese, Head, Department of Politics, St. John's College, Anchal.

Economics

1. Cherien, P E. **The agro processing industries in Kerala : An analysis with emphasis on farm industry linkages.** Kerala. Dr M Kunhaman, Reader, Department of Economics, University of Kerala, Kariavattom.

Education

1. Arora, Rajni. **Status of different enzymes in active and inactive females during phases of menstrual cycle.** Punjabi. Dr M S Sohal, Head, Department of Sports Sciences, Punjabi University, Patiala.

2. Bahadur Singh. **Effect of Pantothenic acid and pyridoxin on the performance of Punjab wrestlers.** Punjabi. Dr M S Sohal, Head, Department of Sports Sciences, Punjabi University, Patiala.

3. Bhatia, Bimla. **Growth development and physical performance of 9-18 years females of Punjab.** Punjabi. Dr M S Sohal, Head, Department of Sports Sciences, Punjabi University, Patiala.

4. Cruz, Lovey Debora. **An analysis of incentives, achievement motivation and motivational tendencies amongst male and female atheletes of Kerala.** Kerala. Dr M L Kamlesh, Principal, Lakshmi Bai National College of Physical Education, Karavattom.

5. Deepali. **Effect of energy balance and dietary pattern on physical performance of female players.** Punjabi. Dr M S Sohal, Head, Department of Sports Sciences, Punjabi University, Patiala.

6. Gabrial, V. **A study of selected anthropometric measurements and physiological variables as functions of playing ability of FB players of various levels.** Kerala. Dr S S Hasrani, Lecturer, Lakshmi Bai National College of Physical Education, Kariavattom.

7. Ramanjit Kaur. **To study the physique and body composition of female athletes and its relation to their dietry intake.** Punjabi. Dr M S Sohal, Head, Department of Sports Sciences, Punjabi University, Patiala.

8. Sud, Kumud. **An investigation of the study approaches and study orientations of distance learners in relation to academic achievement and personological factors.** HP. Dr B P Verma, Department of Education, Himachal Pradesh University, Shimla.

9. Verma, Het Ram. **Attitude towards modernization in relation to alienation, achievement motivation and values of rural educated youth of HP.** HP. Dr Balbir Kaur, Department of Education, Himachal Pradesh University, Shimla.

Commerce

1. Ajay Kumar. **Financal performance of Tea Cooperatives**

in Himachal Pradesh : A case study of Kangra District. HP. Dr S S Narta, Department of Commerce, Himachal Pradesh University, Shimla.

2. Antony, Joseph G. **The role of Kerala Tourism Development Corporation Ltd. in the promotion of tourism.** Kerala. Dr M Sarngadharan, Prof, Department of Commerce, University of Kerala, Trivandrum.

3. Dhawan, Vikas. **Role of regional rural banks in the development of Himachal Pradesh.** HP. Dr Suresh Kumar, Department of Commerce and Management Studies, Himachal Pradesh University, Shimla.

4. Fredi Julian, M. **A study on sea food industry in Kerala.** Kerala. Dr S Kevin, Reader, Institute of Correspondence Courses, University of Kerala, Kariavattom.

5. Prasad, Nandakumar Damodara. **Human resource management in the textile industry in Kerala.** Kerala. Dr M Sarngadharan, Prof, Department of Commerce, University of Kerala, Trivandrum.

6. Pushpangathan, G. **A study on the quality of customer service in public sector banks in Kerala.** Kerala. Dr K Sasikumar, Reader, Department of Commerce, University of Kerala, Trivandrum.

7. Ranjodh Singh. **Role of tourism in economic development of Himachal Pradesh.** HP. Dr Sagar Vijay Malhotra, Department of Commerce, Himachal Pradesh University, Shimla.

8. Santhosh, V S. **Tourism marketing in Kerala: An evaluation study on tourism marketing strategies.** Kerala. Dr K Sasikumar, Reader, Department of Commerce, University of Kerala, Trivandrum.

9. Subhash, T. **Managerial problems of consumes co-operative societies in Kerala.** Kerala. Dr S Kevin, Reader, Institute of Correspondence Courses, University of Kerala, Kariavattom.

Management

1. Mohinder Chand. **Performance evaluation of public sector enterprises : Comparative study of National Fertilizers Ltd and ONGC.** HP. Dr Suresh Kumar, Department of Management Studies, Himachal Pradesh University, Shimla.

HUMANITIES

Fine Arts

Music

1. Preethy, K. **Ragamudras in Dikshitar Kritis : A study.** Kerala. Dr K Omanakutty Amma, Prof and Head, Department of Music, Government College for Women, Thycaud, Trivandrum.

Languages & Literature

English

1. Desai, Falguni Harshadrai. **The use of myths in the plays of Wole Soyinka and Girish Karnad : A study.** S Gujarat. Dr E V Ramakrishnan, Reader, Department of English, South Gujarat University, Surat.

Punjabi

1. Bhupinder Kaur. **Concept of bondage and emancipation in Guru Nanak Bani.** Panjab. Dr Darshan Singh, Department of Guru Nanak Sikh Studies, Panjab University, Chandigarh and Dr Pargat Singh, P O K N 18, Hichili Hearts U K SG4 93T.

Hindi

1. Daniel, Annamma. **A sociological study of women characters of Maithlishasran Gupta.** Kerala. Dr S Omana, Lecturer, St. Stephen's College, Pathanapuram.

2. Gangasree, G. **A study of the novel literature of Amrit Rai.** Kerala. Dr N Suresh, Lecturer, S N College, Kollam.

3. Jayalakshmi. **Dharmavir Bharati ka sahitya : Ek adhyayan.** Kerala. Dr N Suresh, Lecturer, S N College, Kollam.

4. Sailaja Kumari, V K. **A critical study of the works of Ganga Prasad Vimal.** Kerala. Dr P Sanal Kumar, Padmavilas, Ulloor, Pongummoodu Jn. Medical College. P O, Trivandrum.

5. Xavier, Stellamma. **Social consciousness of Rambhakta poets in Hindi with special reference to Tulsidas.** Kerala. Dr N Ravindranath, Prof and Head, Department of Hindi, University of Kerala, Kariavattom.

History

1. Gangadharan, V A. **Socio-cultural and economic change of the Mappilas in Malabar under the Madras Presidency.** Kerala. Dr B Sobhanan, Reader, Department of History, University of Kerala, Thiruvananthapuram.

THESES OF THE MONTH

A list of doctoral theses accepted by Indian Universities

SOCIAL SCIENCES

Library & Information Science

1. Vijaya Sudha, Vavilala. **Indian Library Association: A critical evaluation of its contribution to the library and information science profession in India.** Andhra.

Psychology

1. Kainthala, Sunil Datt. **An experimental study of intermodality information processing.** Garhwal. Dr R K Bajpai.

2. Odera, Peter. **Culture contact of foreign students from Middle East and African countries in India.** AMU. Prof Qamar Hasan.

3. Shukla, Sukhdev Roy. **A study on learning aptitude of the visually handicapped children.** Garhwal. Dr H S Saxena.

Sociology

1. Bhatt, Manju. **Slums in a metropolis : A case study of Delhi.** JNU.Prof K L Sharma, Centre for the Study of Social

Systems, Jawaharlal Nehru University, New Delhi.

2. Geeta Rao, A. **Migration trends and occupational mobility pattern in Visakhapatnam Steel Plant : A case study.** Osmania. Prof (Mrs) N Vijaya, Department of Sociology, Osmania University, Hyderabad.

3. Nageswari, A. **A study of social change among Nadars of Tamil Nadu with special reference to women.** Bangalore. Dr C Rajagopalan, Prof(Retd), 1218, 34th Cross, 4-T Block, Jayanagar, Bangalore.

4. Rama Padma, G. **An analysis of old age security in Andhra Pradesh : A comparative study of a developed and a less developed region.** JNU.Dr Murali Dhar Vemuri, Centre for the Study of Regional Development, Jawaharlal Nehru University, New Delhi.

5. Singh, Kavita. **A study of social and farm forestry in Bilaspur District of Madhya Pradesh.** *Chasidas.* Dr D N Tewari, Director General, IFR and Edu. Council, New Forest, Dehradun.

6. Srikantan, K. **Impact of sericulture on rural Karnataka: A sociological study.** Bangalore. Dr G Sivaramakrishnan, Department of Sociology, Bangalore University, Bangalore.

7. Syam Prasada Rao, Chodagiri. **Changing tribal scene: Prospect and retrospect.** Andhra.

Social Anthropology

1. Bhattacharjee, Chandana. **Movement for autonomy : A case study of the Bodo Kacharis of Assam.** NEHU. Dr A K Ghosh and Dr P K Dutta, Department of Anthropology, North Eastern Hill University, Shillong.

Political Science

1. Afghan Ahmad. **Contribution of public sector undertakings in UP to the developmental process.** AMU. Dr (Mrs) Abida Samiuddin.

2. Baruah, Biswajit. **Indo-US relations, 1981-1988.** Dibrugarh. Dr A N S Ahmed, Prof, Department of Political Science, Dibrugarh University,

Dibrugarh.

3. Chauhan, Digamber Singh. **Sthaniya swashasan evam mahila rajnitik sehbhagita: Garhwal Janpad ka ek adhyayan.** Garhwal. Dr R K Gairola.

4. Fateh, Faiyaz. **The impact of the abolition of Caliphate on Pan-Islamism in India.** JNU. Prof Mohammad Sadiq, Centre for West Asian and African Studies, Jawaharlal Nehru University, New Delhi.

5. Iftekhar Ahemmed. **Political participation of minor ties and backward classes in Orissa.** AMU. Prof A F Usmani.

6. Jayal, Niraja Gopal. **The state and democracy in India : Recent challenges to public policy.** JNU. Prof Kuldeep Mathur, Centre for Political Studies, Jawaharlal Nehru University, New Delhi.

7. Jondhale, Surendra Vithalrao. **Dalit movement in Maharashtra.** **Marathwada.** Dr J R Shinde, Prof, Dr Babasaheb Ambedkar Marathwada University, Aurangabad.

8. Rane, Vilaskumar N. **Bhandara Jilhyateel mahavidyalyeen vidyadhyacha rajkiya abhyas.** Nagpur. Dr C V Diwan, Vice Principal, C P & Berar College, Nagpur.

9. Thakur, Harish Kumar. **Successionism in Kashmir since 1980.** HP.

Economics

1. Al-Mobaydeen, Hasan Ibrahim. **An analysis of public expenditure in Jordan.** Baroda.

2. Borgohain, Tarujyoti. **Agricultural development, marketed surplus and price of foodgrains in Indian economy.** NEHU. Dr Shri Prakash and Dr T Lawma, Department of Economics, North Eastern Hill University, Shillong.

3. Lakshmikanthamma, S. **Economics of watershed development approach to dryland agriculture.** Bangalore. Dr K N Ninan, Assoc Prof, Institute of Social and Economic Change, Bangalore.

4. Sati, Mahesh Chandra. **Uttar Pradesh ke parvatiya kshetron mein krishi vikas: Garhwal evam Kumaun Mandal ka tulnatmak arthik adhyayan.** Garhwal. Dr N S Bisht.

5. Sen, Sucharita. **Irrigation systems and their effect on agricultural development : A case study of West Bengal.** JNU. Prof M H Qureshi, Centre for the Study of Regional Development, Jawaharlal Nehru University, New Delhi.

6. Sharma, Aruna. **Urban female participation in Himachal Pradesh.** HP.

7. Sharma, Rakesh. **Tourism in the Kangra Vally , Himachal Pradesh : A study in socio economic affects of tourism.** Garhwal. Dr S C Bagri, Department of Economics, Hemwati Nandan Bahuguna Garhwal University, Srinagar.

8. Singh, Krishna Kumar. **Grameen vikas, ek arthik adhyayan : Bhojpur Jila ke vishesh sandarbh mein.** Magadh. Prof R P Rai, (Retd), Department of Economics, Dr Hari Singh Gour Vishwavidyalaya, Sagar.

9. Swain, Bhagaban. **Adopation of new technology, production efficiency and agrarian relations in Orissa.** JNU. Dr R K Sharma, Centre for the Study of Regional Development, Jawaharlal Nehru University, New Delhi.

Public Administration

1. Ramakrishnaiah, M. **Administration of the National Adult Education Programme in A P : A study of six centres in the state of Andhra Pradesh.** Osmania. Prof K V Srinivasan, Department of Public Administration, Osmania University, Hyderabad.

2. Subba Rao, Annapragada. **Management of water supply in Visakhapatnam Municipal Corporation: A study of public utility.** Andhra.

3. Venkata Subbaiah, S. **Administration of educational programmes for tribal welfare in A P : An evaluation of Mahboobnagar District.** Osmania. Dr S Bhoopathi Rao, Department of Public Administration, Osmania University, Hyderabad.

Education

1. Jasvir Singh. **Effect of administration of vitamins and minerals on the performance of female athletes.** Punjabi. Dr M S Sohal, Head, Department of Sports Sciences, Punjabi University, Patiala.

2. Jayadheer Reddy, P. **A study of the effectiveness of teaching Science through electronic media and activity method in primary schools of Andhra Pradesh.** Kakatiya. Prof G Ramesh, Department of Education, Kakatiya University, Warangal.

3. Kailasalingam, H M. **An investigation into the interaction effect of some factors on burn out among teacher education in Karnataka.** Karnatak. Dr H M Kasinath, Reader, Department of Education, Karnatak University, Dharwad.

4. Khanduri, Geeta. **Garhwal Mandal mein madhyamik star per balikayon kee shaikshanik avashyaktayon ka adhyayan.** Garhwal. Dr Kusum Agarwal.

5. Mishra, Krupani Prasad. **Comparative study of cognitive moral development model with traditional approach in terms of moral development and value clarification of secondary school students.** Devi Ahilya. Dr D N Sansanwal, Department of Education, Devi Ahilya Vishwavidyalaya, Indore.

6. Navdeep Kaur. **Nutritional status of female players as studied from blood.** **Punjabi.** Dr M S Sohal, Head, Department of Sports Sciences, Punjabi University, Patiala.

7. Oberoi, Sunila. **A study of certain socio-psychological correlates of career orientation among college and university female students of Himachal Pradesh.** HP.

8. Prasad, K Geetha. **Integration of population education with Biological Science syllabus at class IX : An experimental study.** **Osmania.** Dr S Sreedhara Swamy, Department of Education, Osmania University, Hyderabad.

9. Pritam Singh. **Influence of some water pollutants on selected biochemical variables in males 18-21 years of age.** Punjabi. Dr M S Sohal, Head, Department of Sports Sciences, Punjabi University, Patiala.

10. Rawat, Leela. **A study of the effect of parental absence on adjustment study habits and academic development of the students of high school classes.** Garhwal. Dr K B Budhori.

11. Sabhlok, Roli. **A study of the awareness and attitude of teachers and students of high school towards environmental education in Jabalpur District.** Durgavati. Dr N N Shrivastava, State Institute of Science Education, Jabalpur.

12. Samantaray, Chintamani. **Evaluation of secondary school staff and administration and a study of their influence on teacher effectiveness in Orissa.** Sambalpur. Dr Bhupendra Singh, Principal, Govt Training College, Bhawanipatna.

13. Samsi, Nighat. **An investgation into the values of female teacher's in relation to their self concept attitude towards teaching and exiety.** Garhwal. Dr G S Aswal.

14. Saxena, Jyotsna. **A study of zachar effectiveness in relation to adjustment job satisfaction and attitude towards teaching profession.** Garhwal. Dr K B Budhori.

15. Shah, Sushma. **Samkaleen Bhartiya shaikshik chintan aur sangit shiksha.** Devi Ahilya. Dr U C Vashisht, Department of Education, Devi Ahilya Vishwavidyalaya, Indore.

16. Soman, E. Physique, **body composition and physical performance of trained and untrained Kerala boys from 9-18 years.** Punjabi. Dr M S Sohal, Head, Department of Sports Sciences, Punjabi University, Patiala and Dr D K Kansal, Principal, Indira Gandhi Institute of Physical Education and Sports, New Delhi.

17. Varma, Latika. **A study of creativity among school going adolescents of different cultures.** Veer Kunwar.

18. Yadav, R S **A composit model of cognitive psychomotor and affective domain abilities: A factor analytic study.** D.Litt. Garhwal.

Commerce

1. Arasu, Anita. **India's trade relations with Malaysia, 1976-1990.** **Durgavati.** Dr H C Sharma, Govt Mahakoshal Arts and Commerce College, Jabalpur and Dr R K Agrawal, G S College of Commerce and Economics, Jabalpur.

2. Ashok Kumar. **Contribution of Integrated Rural Development Programme in the eradication of poverty: A case study in Kirtinagar Block.** Garhwal. Dr K S Negi.

3. Bhat, V S. **An enquiry into the working of multipurpose service co-operative societies in Sirsi Taluka, Karnataka State with special reference to Totagars Co-operative Sales Society in Sirsi.** Karnatak. Dr K S Daniel, Reader, Department of Commerce, Karnatak University, Dharwad.

4. Gupta, Sanjay Kumar. **A critical study of international banking of State Bank of India.** Garhwal. Prof K S Negi.

5. Khandgave, Namdeo Govindrao. **Lead bank scheme and rural development with special reference to Latur District.** **Marathwada.** Dr S A Somwanshi, Reader, Department of Commerce, Dr Babasaheb Ambedkar Marathwada University, Aurangabad.

6. Narendra Singh. **A study in to demographic and psychographic factors in consumer complaining behaviour.** Garhwal. Dr Alok Saklani.

7. Ndegwa, Julius Owuor. **A study of working capital in Indian joint stock companies, 1981-1991.** Marathwada. Dr N G Bapat, Prof, Department of Commerce, Dr Babasaheb Ambedkar Marathwada University, Aurangabad.

8. Negi, J D S **Analysis of financial statements of Indian Drugs and Pharmaceuticals Ltd: A case study of Birbhadra Unit, Rishikesh.** Garhwal. Prof K S Negi.

9. Ram Saran. **Financing of priority sector by Indian public sector commercial banks: A critical analysis.** Garhwal. Prof K S Negi.

10. Rawat, Hukam Singh. **Industrial development of Garhwal Region: Problems and prospects.** **Garhwal.** Dr R C Dangwal.

11. Sarnaik, Avinash Dinkarrao. **Industrial relations in some selected state enterprises in Maharashtra State.** Marathwada. Dr S A Somwanshi, Department of Commerce, Dr Babasaheb Ambedkar Marathwada University, Aurangabad.

12. Sharma, Punam. **The role of foreign aid in India's economic development.** HP.

13. Sharma, Sristy Vishwanath. **Working and performance of regional rural banks in Telangana Region, A P.** **Durgavati.** Dr J P Chourasia, G S College of Commerce and Economics, Jabalpur.

14. Shaukat Ali. **Comparative study of the financial performance of Air India Corporation and Indian Airlines Corporation.** AMU. Prof Nafees Baig.

15. Upendra Sastry, S. **Training and executive development in State Bank of Hyderabad : A study.** **Kakatiya.** Prof G Krishna Murthy, Department of Commerce and Business Management, Kakatiya University, Warangal.

16. Usha Rani, A. **Marketing orientation in banking organisations : A case study of select banks in twin cities.** Osmania. Prof P Subrahmanyam, Department of Commerce, Osmania University, Hyderabad.

17. Yeshwantrao, Kshirsagar Balkrishna. **A study of financial working of joint stock companies in India with special reference to companies experiencing losses.** Marathwada. Dr N G Bapat, Prof, Department of Commerce, Dr Babasaheb Ambedkar Marathwada University, Aurangabad.

Home Science

1. Borkar, Sunita S. **Changing family values and its effect on selected home management practices of working and non working homemakers.** Nagpur. Dr (Mrs) Asha Patwardhan, Head, Post Graduate Department of Home Science, Nagpur University, Nagpur.

2. Edward Raj, Anbarasi. **Ramdomized iron supplementation trial with different dose levels in pregnant women: Eeffect on selected parameters of material and infant outcome and efficacy of a home based delivery system.** Baroda.

3. Pandya, Rameshwari Mahesh. **Developing a course and video instructional package on 'women and law' and measuring the effectineness of package with the students of Faculty of Home Science, Vadodara.** Baroda.

4. Vishwakarma, Prarthana. **Energy and protein requirement of adult human beings.** **Durgavati.** Dr B R Patte, Prof and Head, Department of Food, Nutrition and Technology, Vetrinary College, Jabalpur and Dr S P Gautam, Department of Bio-Science, Rani Durgavati Vishwavidyalaya, Jabalpur.

MANAGEMENT

1. Ambika Sharanjit Kaur. **Customer expectation satisfaction : A distance education in management.** Thapar. Late Prof P K Kapoor and Dr B S Bhatia, Prof, Department of Business Management, Punjabi University, Patiala.

2. Ranganayakulu, Bodavala. **Design of management information system : A functional approach case study of Visakhapatnam Steel Plant.** Andhra.

3. Thatchinamurthy M. **A study of statutory reliefs for oppression and mismanagement in Indian Companies Act, 1956.** Alagappa.

4. Venkateshalu, G. **Human resource development in commercial banks.** Krishnadevaraya. Prof P Subba Rao, Sri Krishnadevaraya Institute of Management, Sri Krishnadevaraya University, Anantapur.

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Further notified that admissions to various Regular Courses in Library Science Journalism advertised earlier have been postponed, so also admission test scheduled on 7th August 1995 until further notice.

Madhyam/3123/95 **Director**

NEW I.C.A.R. AWARDS

The Indian Council of Agricultural Research, New Delhi, announces the constitution of the following New Awards to be given away from 1995 onwards.

1. **Best Institution Award**

   In order to recognise the best performance in Agricultural Research, Extension and Education, three Agricultural Awards of Rs. One lakh each will be given to two ICAR Institutes/N.R.C./Project Directorates and One State Agricultural University, partially out of the interest accrued from the King Boudin Award bestowed on the ICAR in 1989.

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The application form for the above awards may be obtained from Dr. R.C. Maheshwari, Assistant Director General (CSC), I.C.A.R., Krishi Bhavan, New Delhi on or before **25th Sept., 1995**. The applications may be forwarded by the Head of the Institution/Directors of Institutes/State Deptt. of Agriculture/Horticulture/Animal Science/Fisheries and Vice-Chancellors of State Agricultural Universities. The last date of submission of applications for these awards is **1.11.1995**. The last date for candidates in the Andaman and Nicobar Islands, Lakshadweep States/Union Territory in the North Eastern Region, Ladakh Division of J&K State and Sikkim is **15.11.1995**.

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INDIAN COUNCIL OF MEDICAL RESEARCH

Applications are invited upto 25th Sept., 1995 for the following posts under the Council's Institutes/Centres :-

(A) AT THE REGIONAL MEDICAL RESEARCH CENTRE FOR TRIBALS, JABALPUR: (1) Assistant Director (Two posts) Scale of pay of Rs. 3700-125-4700-150-5000 : For post No. 1 A.D. (Community Medicine) : Essential Qualification & Experience: M B.B S with 12 Years research/teaching experience in Community Medicine (10 Years research/teaching experience for candidates possessing M D in PSM/Community Medicine/Public Health etc) Original work as evidenced by publications **Job Requirements:** To assist in planning and implementation of research in Community Medicine with particular reference to health problems of tribals as also surveys in operational interventions and action oriented research The job requires extensive touring in the tribal areas **For post No. 2A.D. (Clinical) Essential Qualifications & Experience :** M B B S with 12 Years research/teaching experience in Genetics/haematology with special reference to Haemoglobinopathies (10 Years research/teaching experience for candidates possessing M D in the relevant field) Original work as evidenced by publications **Job Requirements:** To assist in planning and implementation of research in genetic disorders particularly haemoglobinopathies in tribals and other communities and formulate operational interventions The job requires extensive touring in the tribal areas **(2) Senior Research Officer - (Community Medicine) (One post) Scale of pay of Rs. 3000-100-3500-125-4500 Essential Qualifications & Experience:** M B B S with 6 Years research/teaching experience in Community Medicine (2 Years research/teaching experience for candidates possessing M D in Community Medicine/Preventive Social Medicine/Public Health) **Job Requirements:** To assist in carrying out research in the field of Community Medicine with particular emphasis on medical and health problems of Tribals, plan and conduct surveys, formulate operational interventions and action oriented research The Job requires extensive touring in the tribal areas

(B) AT THE INSTITUTE FOR RESEARCH IN REPRODUCTION, BOMBAY : (1) Deputy Director (Medical) - (One post)-Scale of pay of Rs. 4500-150-5700 Essential Qualifications & Experience : M B B S with 12 Years research/teaching experience of conducting and co-ordinating research studies related to reproductive health specially family planning (10 Years research/ teaching experience for candidates possessing M D Community Medicine) Original work as evidenced by publications **Job Requirements:** To assist the Director to design and implement various family welfare programmes

(C) AT THE INSTITUTE FOR RESEARCH IN MEDICAL STATISTICS, NEW DELHI :- (1) Senior Research Officer (Anthropology)-(One post)-Scale of pay of Rs. 3000-100-3500-125-4500. Essential Qualifications & Experience: Ist class M Sc / M A in Anthropology with 6 Years research/teaching experience in studies relating to anthropological perspectives of health and nutritional problems of communities (2 Years research/teaching experience required for candidates possessing Ph.D. in the relevant field) **Desirable:** Experience of community surveys on anthropometric measurements **Job Requirements:** To participate in planning & carrying out anthropometric studies in relation to health and nutritional problems among various communities. Extensive touring will be an inherent part of the job

(D) AT THE ICMR GENETIC RESEARCH CENTRE, BOMBAY: (1) Senior Research Officer (Two posts) Scale of pay of Rs. 3000-100-3500-125-4500. For post No. 1 S.R.O. (Cytogenetics) Essential Qualification & Experience: 1st Class M Sc in Applied Biology (Cytogenetics) with 6 Years research/teaching experience in the field of Cytogenetics (2 Years in the case of candidates possessing Ph D in Applied Biology (Cytogenetics) **Desirable:** Candidates having experience in the above discipline in human genetics would be preferred **For Post No. 2 S.R O. (Molecular Biology) Essential Qualifications & Experience :** 1st Class M Sc in Molecular Biology (Life Science) with 6 Years research/teaching experience in Molecular Biology (2 Years in the case of candidates possessing Ph D. in Molecular Biology) **Desirable:** Candidates having experience in the field of human genetics in above discipline would be preferred. **Job Requirements:** To assist the Officer-in-Charge and/or Director of the Centre in conducting/planning/ coordinating research activities in the field of Cytogenetics (under Post No 1 and Molecular Genetics under Post No 2)

(E) AT THE NATIONAL INSTITUTE OF NUTRITION, HYDERABAD: (1) Deputy Director (Medical) (One post) Scale of pay of Rs. 4500-150-5700 : Essential Qualification & Experience : M B B S with 12 Years research/teaching experience as evidenced by good quality publication in Obst & Gynae (10 Years research/ teaching experience for candidates possessing M D in Obst & Gynae) **Job Requirements :** The incumbent is required to supervise/guide a team of research workers He/She will (a) plan and organise hospital/community based research activities in the field of maternal nutrition (b) also assist in the training programmes of the Institute **(2) Assistant Director (Extension and Training) (One post) Scale of pay of Rs. 3700-125-4700-150-5000. Essential Qualification & Experience :** 1st Class M Sc in Life Sciences with qualification in Communication/Journalism with 12 Years experience in writing/editing popular science articles (10 Years experience in case of candidates possessing a doctorate degree) **Desirable:** Proficiency in Hindi/Telugu **Job Requirements:** The selected candidate will be required to assist in writing/ editing popular scientific articles on Nutrition for books and journals, Assist in training programmes for medical personnel and also participate in communication oriented research projects **(3) Senior Research Officer (Epidemiology) (Two posts) Scale of**

pay of Rs. 3000-100-3500-125-4500. Essential Qualification & Experience: M B B.S. with 6 Years research/teaching experience (2 Years in case of M D. Community Medicine/PSM) in Community Medicine/Preventive & Social Medicine including 2 Years experience in organising large scale epidemiological surveys/ community studies. **Desirable:** Evidence of quality work in the community nutrition, working knowledge in Hindi and ability to write scientific articles will be an added advantage **Job Requirements:** The incumbent will be required to assist in planning, co-ordinating and implementing large scale community based studies all over India, including backward and remote tribal areas and should participate actively in the Institute's training programmes **(4) Senior Research Officer (Medical) (One post) Essential Qualification & Experience:** M.B.B.S with 6 Years teaching/research experience (2 Years in case of M.D in paediatrics) in conducting clinical studies and paediatrics patient management in the Hospital. **Desirable:** Evidence of original scientific publications. **Job Requirements:** To assist in planning and carrying out research and training in Child Health Selected candidate should be prepared to work in the Hospital and also participate in the Institute's training programmes.

(F) AT THE NATIONAL INSTITUTE OF CHOLERA & ENTERIC DISEASES, CALCUTTA: Senior Research Officer (One Post) Scale of pay of Rs. 3000-100-3500-125-4500. Essential Qualification & Experience: (1) M.B B.S. with 6 Years research/ teaching experience in public health/community medicine/epidemiology with interest in diarrhoeal diseases. **OR** M D. in preventive & social Medicine with 2 Years of research/teaching experience in areas mentioned above **Job Description:** (1) To assist in organising community studies related to diarrhoeal including investigation of epidemics. (2) To plan, conduct and supervise research work in diarrhoeal diseases in field areas. (3) The incumbent should be prepared to go on field/laboratory duty anywhere in India as and when required.

(G) AT THE RAJENDRA MEMORIAL RESEARCH INSTITUTE OF MEDICAL SCIENCES, PATNA: Assistant Director (Epidemiology) (One Post) Scale of pay of Rs. 3700-125-4700-150-5000 Essential Qualification & Experience: (1) M.B.B.S. with 12 Years research/ teaching experience in the field of Epidemiology of Parasitic diseases of Public Health importance. **OR** 10 Years research/ teaching experience for candidates possessing M.D. in Preventive & Social Medicine/Community Medicine/Medicine/Epidemiology. **Desirable:** Experience in Epidemiological studies in Parasitic diseases especially leishmaniasis. **Job Requirements:** The incumbent is required to plan, conduct, analyse and report, epidemiological research studies and control strategies relating to leishmaniasis (and other diseases, as required).

(H) AT THE NATIONAL INSTITUTE OF VIROLOGY, PUNE: (1) Assistant Director (Statistics/Biometry) (One Post) Scale of pay of Rs. 3700-125-4700-150-5000. Essential Qualification & Experience: 1st Class M.Sc. in Statistics/Biometry with 12 Years research/teaching experience in the above fields or (10 Years research/teaching experience for candidates possessing Ph.D. in the relevant field). Original work as evidenced by publications **Desirable:** Thorough knowledge of applications of computers **Job Requirements:** Analysis of epidemiological and other laboratory data To carry out research in mathematical modelling of viral diseases and epidemics. To carry out research programmes of the Institute in the above fields. He/She may be required to work in the field for any length of time in any part of India

Age: Below 50 Years for the post of Deputy Director and below 45 Years for the post of Asstt Director/S R O as on 25th Sept, 1995 **SC/ST candidates allowed relaxation in accordance with Govt. of India Rules in force.**

Candidates belonging to SC/ST communities will have to furnish certificates from prescribed authority in the required format printed at page 345 of the brochure on reservation of SC/ST in services which can be supplied on demand failing which they will not be entitled to the concession admissible to them, if any. Since it is not possible to call all the eligible candidates for the interview, the applications will be shortlisted for the purpose and the decision of the Director General will be final. The number of vacancies to be filled may vary at the time of actual selection. In the event of non-availability of suitable candidates for advertised posts, the positions can be filled up at lower level. Allowances as per Central Government rules are admissible on the above pay scales Benefits of pension admissible. **Private practice is not allowed. However, NPA @ Rs. 600/-p.m. on a pay from 2200-2999, @ Rs. 650/-p.m. on a pay from Rs. 3000-3699 and @ Rs. 950/- p.m. on a pay from Rs. 3700-5999 is admissible to medical graduates. Candidates called for interview for the post of Deputy Director & Asstt. Director will be paid 1st class rail fare and for the post of Senior Research Officer will be paid IInd class rail fare by shortest route, on production of documents.** Applications from employees working in Central/State Govt. deptt./Public Sector Undertaking and Govt funded research agencies must be forwarded through proper channel. **Application forms can be obtained from the Office of the Director General, Indian Council of Medical Research, Ansari Nagar, Post Box No. 4911, New Delhi- 110029. Forms duly completed should be sent to Director General, Indian Council of Medical Research, Ansari Nagar, Post Box No. 4911, New Delhi- 110029 with a crossed IPO for Rs. 8/- payable to the Director General, ICMR, New Delhi. SC/ST candidates are exempted from this payment. Incomplete and late application or without postal orders will not be entertained. The name of the post and of the Institute/Centre must be indicated in the Application form. Separate application forms should be submitted for each post with crossed IPO for Rs. 8/- and for each Institute/Centre.**

Any canvassing by or on behalf of the candidates or to bring political or other outside influence with regard to the selection/recruitment shall be considered 'a DISQUALIFICATION.

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